

# Understanding environmental, health and economic activity interactions following transition of ownership in gold mining areas in Tanzania: A case of private to public



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## ABSTRACT

Mining is an important source of revenue for many developing countries, however, the social, environmental and economic impacts of mining are often poorly monitored. The recent transition of a gold mine in Western Tanzania—from large-scale gold mine under private, multinational ownership, to medium-scale public and national owned mine with limited life length offers a prime opportunity to understand the implications of changes in ownership and scale on the local economy and community well-being. We conducted 44 semi-structured interviews with community members in four villages adjacent to the mine site. We find that the local economy and public service provision contracted in response to the mine transition and downscaling, with ramifications for food security and healthcare access. Community members also highlighted the lack of information surrounding the mine transformation. This illustrates that considering the post-transition phase of large-scale mines is important for providing long run sustainable livelihood strategies in mining communities.

## 1. Introduction

Global mining activity has undergone rapid expansion into emerging markets in the past several decades by tapping into mineral deposits in Africa, Asia, and South America that were previously under-explored (De Haas and Poelhekke, 2016). Expansion into these new areas has provided rich testbeds for analysis of many longstanding debates on the social, political, economic and environmental impacts of mining. While some research explores the positive economic development effects of resource development and local economic linkages (Aragón and Rud, 2013; Benschaul-Tolonen, 2018; Edwards et al., 2014; Hilson, 2002; Kotsadam and Tolonen, 2016; Wright and Czelusta, 2007), others find that increased revenue from extractive industries undermines accountability, increases corruption in government and institutionalizes preferences for wealthy foreign corporations over citizens (Germond-Duret, 2014; Knutsen et al., 2016; Raleigh and Urdal, 2007). More recent work has focused on avenues for avoiding the resource curse (see van der Ploeg, 2011) by building economic resilience in host countries through policy interventions that encourage market

linkages and diversification (Bastida, 2014; Farooki and Kaplinsky, 2014).

While intentionally skirting the resource curse debate, Hilson (2018) demonstrates that despite evidence that innovative policy development can leverage mineral assets to create ‘growth poles’, many countries (particularly in sub-Saharan Africa) maintain a focus on large-scale mining that exposes national governments and host communities to certain vulnerabilities and inefficiencies. He asserts that even though much of the revenue from mining remains in the host country, the host governments are partially to blame for the ineffectual use of those funds which leads to “underwhelming economic development” (Hilson, 2018, p. 9) as the large-scale mining sector has weaker than desired local economic linkages.

Due in part to the underperformance in the mineral and extractives sector described by Hilson (2018), many host nations are now working to reform their resource management policies, with some countries entering a post-liberalism phase where national companies are taking a more prominent role in resource exploitation. Importantly, many of the investments made over the past two decades into large-scale mines in

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Africa have reached or are approaching the later stages of the mine lifecycle. This means they are moving towards downscaling or closing, which can lead to challenges to sustain domestic and local revenue and economic activity (see for example [Siyongwana and Shabalala, 2018](#)). For such countries, the shift in national policy on large-scale mining coincides with diminished productivity and viability for existing assets and raises important questions on what impacts the transition in policy and asset ownership has on local communities and economies.

This paper examines the linkages between mine downscaling and local socio-economic effects in the context of recent shifts in national mining policy in Tanzania. The Tanzanian context is described in [Jacob and Pedersen \(2018\)](#) and [Lange and Kinyondo \(2016\)](#). In this paper, we explore the relationship between Biharamulo Gold Mine—a former industrial-scale mine that changed hands from Africa Barrick Gold (called Acacia Mining since November 2014) to the national company Stamigold in 2013—and the neighboring rural communities of Mavota Village. The community members refer to the former owner of the mine as “Barrick”, and we will use this name to refer to the former owner of the mine. This case study provides insight into how the tensions around nationalization of mining assets interact with the negative local economic impacts that can accompany mine downscaling, resulting in challenges for community well-being and erosion of trust in company-community relations. The results from 44 semi-structured interviews indicate that the economy contracted significantly after the transition, and that public services formerly provided by the mining company deteriorated under the new mine ownership. Several interviewees highlight the lack of discussion around the mine transition process and the remaining life length of the mine. New policy paradigms around nationalization of assets require significant adaptation as well as political and administrative efforts to institutionalize and thereby realize substantial development gains ([Pedersen and Jacob, 2017](#)).

The next section of this paper examines the recent history of Tanzania’s mining policy context and the precursors that led to its transition towards resource nationalism. The paper then provides brief overviews of the challenges that can arise in mine closure and downscaling in order to contextualize the socio-economic context that the case study falls under. We then turn to describing the methodology of the case study and present the main findings from our research. The paper closes with a discussion of the implications of the case study as it relates to responsible management of mine assets during the downscaling process.

## 2. Background

While the trajectory of mining policy in Tanzania has been thoroughly described elsewhere (for instance, in [Jacob and Pedersen, 2018](#); [Lange and Kinyondo, 2016](#); [Pedersen and Jacob, 2017](#)) a brief review of some of the major milestones is provided here. Tanzania has a long tradition of gold extraction. German colonizers explored for gold starting in the early 19th century, followed by the colonial British government (1918–1961) which extracted gold, diamonds, lead, and salt ([Lange, 2011](#)). Upon independence in 1961, the mineral resources were nationalized which led to a decline in mineral production. Gold mining investment picked up only with the 1997 Mineral Policy and 1998 Mining Act, with Foreign Direct Investment reaching \$2.5 billion between 1998–2008 ([The Mineral Policy of Tanzania, 2009](#)). Six large-scale gold mines were established during this time. Since then, the value of gold exports jumped from \$3.34 million in 1998 to \$1.53 billion in 2017 ([Hilson and Maconachie, 2008](#); [Monthly Economic Review, 2017](#)).

### 2.1. National-level taxation controversy

With the increase in foreign gold mining investment, international mining companies operating in Tanzania have been accused of extracting profits from their extraction of natural resources without

paying their fair share of taxes to the national government. This fact has been alleged to stem from two causes: (1) over-generous tax concessions granted to international companies due to a combination of mismatched bargaining power and political corruption; and (2) outright tax avoidance on the part of the companies ([Lambrechts, 2009](#)). Between 2008 and 2010, mining tax exemptions in Tanzania totaled almost \$64 million ([TWaweza, 2010](#)). Mining activities have also been met with conflict over land and licensing between investors and surrounding communities ([Helliesen, 2012](#); [Mwakaje, 2013](#)). Acacia Mining, formerly known as Africa Barrick Gold (ABG), is one such foreign entity operating in Tanzania that has received widespread criticism. It is majority-owned by the world’s largest gold mining company, Barrick Gold, and currently owns and operates three mines in Tanzania, with licenses covering 7200 km<sup>2</sup> in the country ([Hilson, 2018](#)). In 2016, Acacia was accused of under-declaring export revenue and operating illegally since 2000 ([Wilson and Mohammed, 2017](#)). Barrick Gold has faced strong organized criticism by employees, communities, and NGOs in Tanzania over the past 10 years ([Newenham-Kahindi, 2011](#)). [Hilson \(2018\)](#) has also pointed out that benefits from its large operations have still been eluded by the mines’ ‘enclave’ designs, where operations are concentrated behind protective barriers with few local linkages and investments.

Some authors have proposed that a solution to this problem is increased “resource nationalism,” i.e., state ownership and mandatory joint ventures in the extractive industry ([Magai and Márquez-Velázquez, 2013](#)). In the past few years, several African states have pivoted their development thinking, spurning the neoliberal model of the 1980s in favor of state-guided economic industrialization ([Ayelazuno, 2018](#); [Roberts, 2015](#)). This policy attitude is occurring in Tanzania, which is experiencing a new shift in its mining policy towards heightened government ownership and participation ([The Mineral Policy of Tanzania, 2009](#)). State attempts to capture the gold sector have amplified with the reestablishment of the State Mining Corporation (STAMICO) within the Ministry of Energy and Minerals in 2015. Aimed at “increasing the contributions of the mineral sector to the national economy and creating employment opportunities to Tanzanians,” its two gold ventures in Biharamulo and Buhemba are operated through the subsidiary Stamigold ([STAMICO, 2016](#)). Revenue from the gold industry is centrally managed, then redistributed to local governments, which are largely dependent on transfers from the central government (accounting for up to 90% of local funds) ([Demuijnck and FASTERLING, 2016](#)).

Under President Magufuli in 2017, Tanzania banned exports of unprocessed gold and enacted new laws requiring the government to own at least a 16% stake in mining projects ([Ng’wanakilala, 2017](#)). It also placed a temporary hold on issuing new mining licenses, raised mining royalties from 4% to 6%, and presented Acacia with a \$190 billion tax bill for its alleged illegal operations and tax evasion<sup>1</sup>. Though Acacia has denied these allegations, it has since agreed to abide by the higher royalty and export fees under the new mining laws. Its parent company, Barrick Gold, also agreed to pay \$300 million to the Tanzanian government in a “show of good faith” and evenly divide profits from mines ([Wilson and Mohammed, 2017](#)). Though similar nationalist policies are aimed at diversification and value addition from natural resources ([Ayelazuno, 2018](#); [Bastida, 2014](#)), recent shifts in policy means the effects of these nationalizing operations on local socio-economic contexts have not yet been fully researched or understood.

Despite the wave of nationalist mining policies, many of the original mines established after the 1998 Mining Act have reached or will reach

<sup>1</sup> The export ban on unprocessed ore took place after the interviews were conducted in January 2017. Therefore, the researchers asked no questions relating to the ban. Most of the media coverage on the tax evasion also took place after the interviews, so it is not likely to expect that the community members were aware of the accusations during the time of the interview.

the end of their lifespan in a few years. Two of the original six large-scale mines have already closed. Impending and inevitable, mine closures will challenge the directions of resource wealth capture, governance, and socio-economic development in Tanzania and across Africa.

## 2.2. Local impacts of Mine downscaling and closure

Of all the stages in a mine's lifetime, closure and remediation is evidently the most permanent (Gibson and O'Faircheallaigh, 2010). Yet, this last phase has received less analysis in current literature, despite common findings of population decline, unemployment, and general economic "bust" effects (Aragón and Rud, 2013; Kotsadam and Tolonen, 2016; Mamo et al., 2017; Robertson and Blackwell, 2014).

During the productive phase of the mine, operations are thought to influence the local economy along three main channels (Chuhan-Pole et al., 2017; Limpitlaw, 2004). First, mining operations generate direct employment and attract local investment, through which local multipliers generate a further increase in demand for goods and services. This has been shown, for example, in Peru (Aragón and Rud, 2013), and in sub-Saharan Africa (Benshaul-Tolonen, 2018; Kotsadam and Tolonen, 2016; Mamo et al., 2017). Second, a fiscal channel allows local, district or central governments to spend mine revenues for the development of public goods and infrastructure, benefitting the productivity of local economies. Third, mining companies can invest directly into the communities under corporate social responsibility (CSR) policies.

It is at the face of mine closure that all three channels for social and economic change become unviable, as "boom-bust" cycles of mining cause economic downturns during transitions to closure, reducing the local multiplier. Often, positive local economic effects generated by large-scale mining operations disappear upon mine closures as employment in mining and services and construction contract, which can lead to permanently lower labor force participation (Kotsadam and Tolonen, 2016). These effects are likely to be compounded by the decreased investment in CSR as the mining company withdraws from the community (Limpitlaw, 2004). It is also important to consider the effects of corruption at the local level. Despite short-term local economic growth, the finding that mining increases bribe payments points to a local-level "economic resource curse" that indicates local economies might suffer from mining activities in the longer run through weakened institutions (Knutsen et al., 2016). Other key closure issues include safety, environment, workforce, infrastructure, and community capacity to survive mine closure (Jackson, 2002), and crime (Axbard et al., 2016). Community livelihoods, aspirations, and concerns are also affected, extending to stresses on family life, food security, mental health, and education levels (Rixen and Blangy, 2016).

Securing long-term local benefits from mine operations requires careful lifecycle planning from inception to post-closure and beyond, considering how communities can be sustainable and enduring. Researchers have pointed out the urgent need to anticipate closure and diversify economies during the mining cycle before downscaling begins (Marais et al., 2017; Robertson and Blackwell, 2014). To mitigate 'ghost town' consequences, Zvarivadza (2018) emphasizes the importance of mining companies' investments in community projects to sustain well-being after mine closure through empowerment of community members. However, for remote communities, options for economic diversification required to break 'boom-bust' cycles of mining are more limited, placing more emphasis on place-based community development using available local social and natural capitals (Robertson and Blackwell, 2014; Zvarivadza, 2017).

## 3. Study context

Tulawaka, now called Biharamulo, Gold Mine operated from 2005 to 2014, first as an open pit and then later as an underground mine. In 2013, ABG, the operator of the mine, announced that it would be

closing the mine and planned to spend \$23 million over a two-year period to properly close and remediate the mine site. Gold production at the Tulawaka mine had been steadily decreasing since 2008 (Shwilima and Konishi, 2014).

Several months after the closure was announced, however, the Tulawaka mine was sold to STAMICO of the Tanzanian State Mining Corporation for \$4.5 million. ABG also transferred the balance of the rehabilitation fund to STAMICO, resulting in a cash payment balance of \$11.6 from ABG to STAMICO. The mine was renamed to Biharamulo and is still in partial operation under the subsidiary body named Stamigold, though major parts of the mine site are in various stages of closure.

ABG (now Acacia Mining) has been accused of aggressively attempting to stall tax reform in Tanzania's extractive industry. Lambrechts (2009) reports that the company "used the leverage of the Canadian government" to apply political pressure against the reforms and denounced an independent report arguing for increased taxation of the mining industry. Tulawaka Mine itself was in operation for eight years, and yet ABG paid no taxes on the mine until its seventh year (Lange and Kinyondo, 2016). The vast majority of gold ore was extracted in the early years of the mine's operations.

## 4. Methods

The research group conducted 44 semi-structured interviews over January 14–16, 2017, in the Mavota Village in Biharamulo District, Kagera Region, in northwestern Tanzania. Mavota was identified as the nearest village to the Tulawaka Gold Mine, and consists of six hamlets, of which five were sampled. The research team was invited to conduct the study by the village leaders and permission to conduct the study was obtained with each of the five hamlet leaders. 10 households were surveyed in the Kalamata hamlet, 2 in Katongo, 10 in Kibingo, 11 in Mavota and 11 in Mlinda hamlet. In total 44 households were surveyed.

Households were chosen to participate in the study following the *Random Walk Sampling* method, with hamlets divided between four research units consisting of one researcher and one research assistant. First, we identified the village center point with the help from the hamlet leader, and the four cardinal directions. Every third household was sampled. If no adult household member was available, the team continued the sampling but returned to the household later. All selected households were sampled. All interviews were conducted in the national language, Kiswahili, through simultaneous rapid note taking and translation work by research assistants, with subsequent translation edits after the interviews. Interviews were later coded for content and attitudes using the qualitative software NVivo.

## 5. Ethical considerations

Ethical approval was obtained from Barnard College, Columbia University in the USA (1617-1110-011), and the Catholic University of Health and Allied Sciences and Bugando Medical Centre joint Research and Ethics Review Committee in Tanzania (CREC/169/2017). Permission to conduct research in Biharamulo was obtained from the respective authorities at the regional, district and village levels. Written informed consent was obtained from the head or representative of the household. Hamlet leaders guided the respective research units to the hamlet center point and along cardinal directions. The hamlet leader was not present during the interviews themselves. For those who were illiterate, a consent form was read out loud by a member of the research team and participants were asked to provide a thumb print if they agreed to participate in the study.

## 6. Results

Female household members were oversampled because of differences in economic activities between the genders, impacting the

**Table 1**  
The demographics of the 44 interviewees along sex and age groups, in addition to mine employment history.

Interviewee Demographics: Sex, Age Groups, and Mine Experience	# of Interviewees		Total
	Female	Male	
18-30 years	14	5	19 (44%)
Prior or Current Mine Employment	1	4	6 (14%)
31-50 years	10	9	19 (44%)
Prior or Current Mine Employment	0	2	2 (4%)
51+ years	4	1	5 (12%)
Prior or Current Mine Employment	1	0	0 (0%)
<b>Total</b>	<b>29 (66%)</b>	<b>15 (34%)</b>	<b>44 (100%)</b>
Prior or Current Mine Employment	2 (4%)	6 (14%)	8 (18%)

likelihood of women being present in the household (Table 1). The majority of respondents depended on agriculture for their livelihoods (Table 2).

Community members reported several pressing concerns around four main interrelated themes involving both adverse environmental and social conditions: water scarcity, food security, economic stagnation, and corporate relations. Each theme will be explored individually to understand the many facets affecting community life.

6.1. Water scarcity

Due to the large geographical coverage of Mavota village, there were a wide variety of water sources depending on individual location and hamlet residence. Sources included boreholes, wells, public tap, and rainwater. The single most-coded theme found during the interviews was water, with the majority (44%) of references portraying the word in a negative manner in both quality and quantity (Fig. 1). One interviewee reported, “We fetch water from far distances, it takes almost two hours by foot - and [it] isn’t good for use, it causes skin diseases when washing your child,” (Male, 36 years). Water was also described as salty or milky.

Negative views on water quality and quantity were overwhelmingly associated with certain key terms such as “weather” and “mine,” which identified two main perceived reasons for changes in physical water accessibility. Some residents blamed drying water sources on the lack of seasonal rainfall and drought, while others also accused Stamigold for their neglect of water infrastructures previously created and maintained by Barrick (Table 3). As one woman (23 years) revealed, “Before the mine closure we had more sources of water, but by now almost all sources of water have been damaged because [the current mine firm] does not provide such services.”

Responses also revealed deteriorating economic access to water. Residents discussed that they now had to buy water under Stamigold, compared to when water was freely available under Barrick. According to one respondent, “When Barrick was here, we were not paying for water at the well, but now we are paying for maintenance.” (Female, 70 years, former mine employee). All 17 interviewees who directly compared Barrick’s and Stamigold’s water services felt negatively about Stamigold’s perceived lack of action. One resident also implicated government responsibility, saying, “The water is very dirty and not safe

**Table 2**  
The responses for sources of household income among the 44 interviewees.

Sources of Household Income	Agriculture	Ag. & Business	Small Business	Laborer	Unassigned	Total
# of Interviewees	28 (64%)	7 (16%)	6 (14%)	1 (2%)	1 (4%)	44 (100%)

for drinking; my opinion is that the government should provide tap water for us to get good water,” (Male, 46 years).

All four respondents (two female, two male) who brought up contamination of water from mining activities were in the Kibingo hamlet of Mavota. They gave accounts of skin diseases and stomachaches, though whether there is localized environmental contamination within this individual hamlet or a broader lack of knowledge of mine impacts is unknown.

6.2. Food insecurity

42 out of 44 respondents (95%) are dependent on some level of agriculture for their food. The main crops grown in Mavota include maize, beans, groundnuts, and cassava, with additional mention of banana and sweet potato crops. Food was the second-most discussed subject, with 48% of responses regarding food described in negative manner (Fig. 2). For instance, many of the respondents expressed concern over the availability of food, often described as “not enough” or “difficult”. When asked if households had worried that they would not have enough food in the past month, 38 out of 44 (86%) respondents said yes.

Most respondents viewed food scarcity as due to a combination of dry weather, lack of money, change in mine ownership, and rising food prices (Table 4). The lack of rainfall was mainly quoted as drought, as crops died under the sun compared to previous bountiful years. As one female respondent (69 years) feared, “Due to the variations in rainfall this year, we worry where we can get food from if the situation persists.”

To cope, many asked for assistance from neighbors or sold livestock as supplementary income. Some could afford to supplement their diets by buying vegetables, fish, and other foods from the market. Yet, many could not: “There wasn’t enough food, and I had no money to obtain extra food from the market,” (Female, 44 years). Another interviewee cited the rising price of one sack of maize from 6000 TZS (\$2.68 USD) to 16,000 TZS (\$7.15 USD). Rising food prices and declining income opportunities following economic changes in the village meant food was harder to afford during the period of drought.

6.3. Community economy

Discussions around the community economy were heavily negative (79% of responses) and heavily emphasized the words “mine,” “mines,” and “mining” (Fig. 3). As one man (43 years) described, “Almost all people in the community are facing economic depression.” There was a strong feeling that the entire community economy had declined following the transfer of mine ownership. A 22 year-old female respondent described, “Prices are high for everything in the market, there are few people, food is hard to find, and money circulation has been difficult.”

Stamigold was blamed for widespread unemployment and shortage of money by all 39 interviewees who discussed employment (Table 5). Economic opportunities were viewed as difficult in the community due to the lack of job opportunities – only 4% of references to current employment opportunities were positive (Fig. 3), and evenly spread across sex and age groups (Table 6). One woman expressed, “In past years our husbands would go as cheap laborers, but now there is nothing like that. Very few people are employed,” (28 years). There was a high perceived linkage between economic activity and who was running the mine. 28 residents looked favorably upon the economy during Barrick’s time, compared to one favorable response under Stamigold. “When you compare the life situation between the two, Barrick and now, life has now

### Water Scarcity

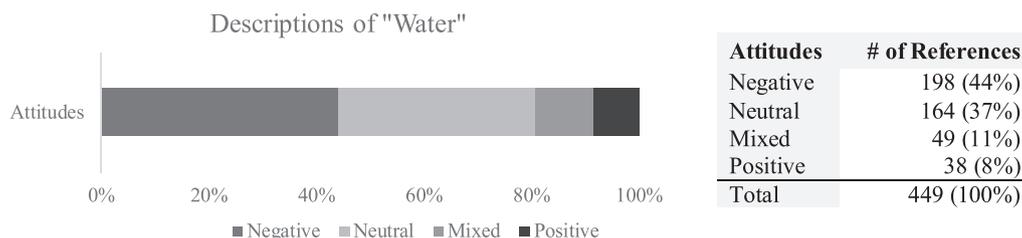


Fig. 1. A breakdown of attitudes by reference during discussions of water, according to the number of responses coded by sentiment and subject matter in NVivo.

**Table 3**  
Perceived reasons for negative water quality and quantity by interviewees.

Major Attributions for Negative Water Quality and Quantity	# of Interviewees
Weather conditions and lack of seasonal rainfall	13
Mine transition given former water provision under Barrick	27
Perceived lack of action from Stamigold providing water services	17
Mining activities contaminating water sources	4
Explicitly mentioning mercury contamination	2

**Table 4**  
Perceived reasons for community food scarcity by interviewees.

Major Attributions for Food Scarcity	# of Interviewees
Changes in weather conditions and drought	30
As caused by the mine or tailings site	3
Changes in food prices; lack of money	14
As directly caused by change in mine ownership	6
Degrading environmental quality (land fertility)	2
Declining village population	2
Insect infestations of crops	2

become poorer.” (Male, 55 years approx.).

#### 6.4. Corporate relations

40 interviewees negatively mentioned Stamigold in terms of declining provisions of community social services and loss of income opportunities from the mine. Women and men equally expressed their dissatisfaction (63% of references in both groups referred negatively to Stamigold). Direct services such as maintenance of schools and roads, were reported to have diminished. “During mining [under Barrick], they were able to invest in schools and hospitals but now we don’t have such services,” (Male, 24 years). Other sectors were also affected because of rising prices, such as house improvements and healthcare access as costs became more prohibitive. These concerns were mainly attributed to the decline in employment at the mine after the change in mine ownership and the subsequent effects of reduced cash flow within the community.

Access to the mine tailings to recover gold was also framed as prohibitive by Stamigold, though one respondent asserted, “Many people need those old tailings for money,” (Female, 44 years). Only five participants admitted to previously using the tailings to generate income, though an additional three participants said family members went. Policies under Stamigold seem to have changed from those under Barrick, namely through increased security measures by the tailings site. “We are not allowed at all to reach those [tailings]. If you reach them, you will be bitten and chased away by security guards. Even children are not allowed,” (Female, 28 years).

No participant answered positively when asked if they approved of

the mine transfer process, and most cited the loss of employment as the reason for dissatisfaction (Table 7). However, one participant hesitated, saying, “I can’t comment directly [on whether I’m satisfied with results of the mine transition process] because of the government decision around mining,” (Male, 43 years). Conversely, the interviews showed an overwhelmingly positive attitude towards Barrick, especially in comparison to their current quality of life. Prevailing sentiments included, “People want Barrick to return because they are now suffering in many sectors,” (Female, 28 years).

#### 6.5. Information gaps

Interviewees expressed lack of knowledge surrounding the mining operations and social policies. All 44 (100%) interviewees said no environmental testing of the surroundings had taken place by the government or companies in question, or that they did not know. Despite the large impacts of the mine on community life, only six (14%) participants had been given the information either formally or through social networks that the mine would be downsized either before or after it had happened. 5% of respondents, one female and one male, cited the village leader as distributing information on the development of the mine and its environmental impacts once a year.

For some, Stamigold remained an enigmatic figure: “I want to know who the owner of the mine is,” (Male, 31 years). Another interviewee had asked a friend for more information concerning the mine transition. In this conversation, the friend had said that the “Tanzanian government wanted the mine area to be owned by Tanzanian people... the government

### Food Insecurity

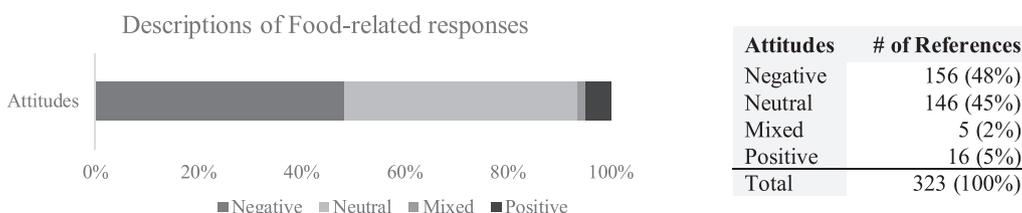


Fig. 2. A breakdown of attitudes by reference during discussions of food, according to the number of responses coded by sentiment and subject matter in NVivo.

Community Economy

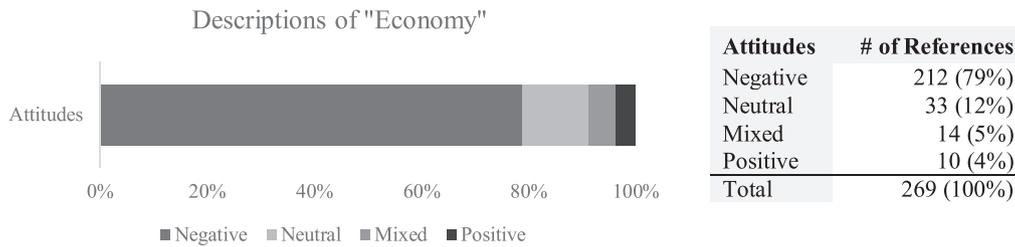


Fig. 3. A breakdown of attitudes by reference during discussions of the local economy, according to the number of responses coded by sentiment and subject matter in NVivo.

**Table 5**  
Perceived reasons for declining economic activity in Mavota as provided during the interviews.

Major Attributions for Negative Economic Activity	# of Interviewees
Declining mine employment opportunities	39
Reduced cash flow within the community	34
Change in mine ownership	6
Declining village population	2

**Table 6**  
The percentage of negative references to employment opportunities along demographic lines.

Sex	Female	Male	
	85%	69%	
Age Group	18-30 years	31-50 years	50+ years
	85%	70%	78%

**Table 7**  
Responses to whether satisfied with the results of the mine transition (44 interviewees).

Answer	No	No Answer or Can't Say	Same as Before	Yes	Total
# of Interviewees	28 (64%)	15 (34%)	1 (2%)	0 (0%)	44 (100%)

doesn't want the mine to be owned by Barrick," (Female, 21 years). Yet, the same respondent later asked, "if the white people [Barrick] will be back here, and if they will help us get jobs?" Echoing this, one respondent expressed his confusion, "I want to know how and why people of this area are not benefiting from the mine?" (Male, 43 years).

Three interviewees implicated corruption in mine employment processes. For example, when asked if the government or mining company interacted with the community economy, one interviewee claimed, "Yes, they provide jobs, but they are difficult to secure unless you pay a bribe," (Female, 44 years).

**7. Discussion**

Given the rapid shifts in the Tanzanian gold mining sector and impending downscaling operations for many of its industrial-scale mines, this paper is placed at the intersection of local socio-economic impacts of mine downscaling and questions of national extractives governance. We sought to understand the importance community members placed on the changes in local economic activity, environmental degradation, and interactions with the mining companies during and after the transition (referring to both downscaling and nationalization). We find that community members' main concerns surrounded shrinking economic opportunities and the failure of the newly downscaled mine and Stamigold, the parastatal, to provide social services

and direct employment compared to those provided under Africa Barrick Gold (now Acacia Mining). Discrepancies between expected and perceived benefits from the mining operations to the community members stands out as a major challenge to managing community relations during the transition process. These findings are consistent with other observations of the increasing presence of state-owned extractive enterprises in Tanzania: that local communities often perceive that foreign-owned companies provide better local benefits, such as higher rates of compensation for land, than the national government (Pedersen and Jacob, 2017).

**7.1. Expectations and reality**

Locally, the interviews show that direct and indirect benefit distribution is perceived to have declined, as Mavota residents lose access to social services, employment — both direct, formal employment at the mining company, and indirect employment spurred by linkages — and face resource insecurity as infrastructure degrades. Simultaneously, rising prices and drought have degraded communities' resilience to cope with the newfound cessation of CSR programs. Community members themselves are not preparing for mine closure, as many are unaware of its status and expressed anxieties over the future of the community.

Such grievances and anxieties indicate gaps between the expected and perceived benefits of the Biharamulo Gold Mine. Relative expectations of social services (for example, in water and health services) as well as unrealistic expectations of wealth after the transition are contributing to increasing disappointment and frustration. Furthermore, as the mine downscales operations and the formal economy begins to dissipate, migration to the informal economy becomes an important coping strategy for some. However, newly restricted access to gold mine tailings has limited income opportunities for some in the village, exacerbating negative feelings towards Stamigold. Respondents feel they had limited opportunity for dialogue with Stamigold to express values, needs, and concerns surrounding the mine transition. The results mirror those of one recent study of the local impacts of mine downscaling in Thabong, South Africa, which described a prevalent 'household misery' – feelings of deprivation, increased poverty, and lack of employment opportunities compared to the past – attributed to the decline in mining operations since 1995 (Ntema et al., 2017).

Low levels of mutual understanding and awareness between Stamigold and community members suggest a perceived non-transparent, non-inclusive entity, compared to a more outwardly engaged Barrick. Generally, Stamigold seems to have evaded a delineation of its new roles, and responsibilities in Mavota compared to those of Barrick. The findings support observations that Barrick placed an increasing emphasis on local content procurement in its CSR reporting (Lange and Kinyondo, 2016). This is perhaps because the company considered the good will of the surrounding community as crucial for maintaining its social license to operate, and that infusing the community with money

from purchases of fruits and vegetables was one way of fostering this relationship.

When looking at the case, the following factors might account for community perceptions: 1) downscaling of operations leading to less revenue available for CSR programs, 2) cessation of CSR programs and no subsequent expanded coverage of shortfalls by other state agencies, 3) diversion of investments and revenues away from local linkages and CSR programming to national corporation and national economy, 4) deteriorating relationships due to changes in community engagement, or 5) lack of mitigation and adaptation planning for downscaling operations.

### 7.2. Long-term community sustainability

General policy options for governments in mine closure situations range from no direct involvement to community assistance for economic diversification (Robertson and Blackwell, 2014). In addition, Stamigold insists on “making a positive contribution to communities in which we operate,” (STAMIGOLD, 2017). Yet, interview results indicate Mavota residents saw little direct involvement by neither the government nor the parastatal - threatening a vision of long-term community sustainability.

Our analysis is consistent with previous findings that the new Tanzanian extractives policies prioritize development of state enterprises over the rights and benefits of communities (Pedersen and Jacob, 2017). Around Biharamulo Gold Mine, the incongruence between community and state priorities has had deleterious effects on social development – the opposite of the intended results from nationalization. These effects were compounded as Stamigold inherited a downscaling asset near the end of its lifecycle, a point in the mine lifecycle where declining communities become more dependent on CSR services for community functioning.

Marais et al. (2017) detailed the mismatch between government support and declining mining economies in light of community neglect after mine downscaling. In Mavota as well, the coincidence of re-focusing revenues and mine priorities from a local to a national focus with the downscaling of operations and decline in local economic activity has created shortfalls in local social and economic development. Where a private enterprise is able to nimbly focus revenue and redirect it to service provision and local economic linkages, nationalization relies more heavily on centralized institutions to provide for local development needs, which could generate inefficiency in local development.

The burgeoning role of African governments and parastatals in their mining industries (Ayelazuno, 2018) not only raises questions over enduring community value following mine downscaling or closures, but also public accountability. The overwhelming lack of knowledge and inclusion surrounding the transition is exacerbated by some accounts of corruption. Corruption allegations are especially problematic for equitable interest representation around the mine, contributing not only to feelings of community disempowerment but also questioning the new national framework for wealth capture (Lange and Kinyondo, 2016). Moreover, the link between mining, corruption, and local institutions found in Knutsen et al. (2016) could provide yet another barrier to diversified for local economic development.

The lack of approval of the mine transfer and perceived erosion of local development priorities also raises questions around social license to operate (SLO) of state-owned companies. The SLO describes the often-tacit acceptance between communities and mine operators within the extractive industries earned through, for instance, investments in community education, trusts, and economically viable projects (Morrison-Saunders et al., 2016). SLO plays into environmental governance because in theory it allows local communities to become increasingly influential actors on how socio-environmental decisions are made, and thus can be used to foster a collaborative development agenda (Prno and Slocombe, 2012).

Two questions should be raised. Will Stamigold face the same scrutiny as foreign private companies operating in Tanzania? Does Stamigold need to consider its SLO at all in its role as a legitimate government operator – especially if it considers the resources it mines as belonging to the state, rather than the community? Stamigold’s unique position may insulate it from the considerations of reputational risk and competitive advantage, investor opinions, and government relations that are normally faced by global mining companies (Burse, 2015). Though we can make no normative recommendations on the requirements for a new SLO between Mavota village and the Biharamulo mine, our findings highlight the lack of discussion surrounding SLO within the community. Future research could explore if and how the term SLO could be applicable in similar mining contexts.

### 7.3. Local versus national benefits

Some authors have distinguished over-emphasizing community acceptance at the risk of undermining benefits for society at large (Demuijnck and Festerling, 2016). Given the aims of extractives nationalization strategies, Stamigold’s public role as a Tanzanian-owned entity leads to questions on whether it has refocused its benefits-sharing to the national level.

While Acacia Mining (formerly ABG) is under much scrutiny for allegedly avoiding its fair share of tax payments (Magai and Márquez-Velázquez, 2013), it nevertheless operated the Tulawaka (now Biharamulo) Mine in a way that left many members of the surrounding community appreciative of the mine’s benefits. Natural resource contracts are often made in secret and international tax law is opaque and confusing, making it hard for a non-expert observer to determine whether a company is playing by the rules and paying its fair share of taxes. Local community sentiment, however, has received increased attention over the years, as researchers and NGOs have shed more light on the potential negative impacts of mining on local populations. For this reason, international mining companies, such as Acacia Mining (formerly ABG), may have prioritized CSR programs in such a way as to avoid negative public relations. Indeed, in 2014 it commissioned a report on its contributions to Tanzania’s economy through local content purchases (Ernst and Young, 2015). Therefore, it may be simultaneously true that ABG unfairly profited from Tulawaka, at the expense of the national budget, and positively supported the local economy through the provision of services and local purchases.

Stamigold, on the other hand, while part of its mission is to increase the Tanzanian government’s revenue from mining projects, seemingly deprioritized expenditures on the local community. Pedersen and Jacob (2017) have observed “increased tensions between communities and state actors with the re-emergence of state-owned mining companies.” They point to instances where communities perceived that they would receive greater compensation for land from foreign companies, and thus preferred them over state-owned enterprises (SOEs).

Of course, if the mine were successfully operated to bring in profits for the Tanzanian national budget, these revenues could be spent on providing better services across the Tanzanian population. It could then be argued that the acquisition of the mine was a net benefit to Tanzania. However, it is not clear that this is the case. When Africa Barrick Gold announced Tulawaka’s closure, it noted that it intended to spend \$23 million in cleaning up the site and closing the mine. Instead, the Tanzanian government bought the mine for \$4.5 million, indemnifying ABG of any environmental or remediation liabilities, and accepted the \$11.6 million balance in the designated cleanup fund. STAMICO thus paid \$4.5 million for an \$11.4 million liability (and to the authors, assets of unknown value), meaning that they must extract gold of at least \$15.9 million to cover the price and the remaining liability. STAMICO has since expanded the mining operations and opened a new pit, but it remains unclear if STAMICO will be able to recuperate these funds from Biharamulo.

While many commentators have encouraged state ownership of

extractive projects, arguing that “increased national control of extractive resources [leads to] more equitable distribution of their benefits,” (Childs, 2016) the findings here demonstrate that SOEs are not a panacea. Under Stamigold’s management, the Biharamulo Mine has produced lower amounts of ore than it did under Barrick’s ownership. This could be due to lack of capacity (for example, all employees at Biharamulo are Tanzania nationals), or that all the high-value and profitable ore has already been extracted, which is not impossible given that Barrick was intending to close the mine. The definitive answer to the question of whether the purchase of the Tulawaka Mine was in Tanzania’s best interest is beyond the scope of this paper.

#### 7.4. Recommendations

In order to overcome the complex losses of mine downscaling in the context of nationalization strategies, it is important to understand the mine lifecycle and the changing community-company relationships along it to better plan for enduring communities. Planning is crucial, and state companies should work with local communities on end-of-asset strategies to prevent a “shock” effect once Biharamulo closes. Long-term incorporation of mine closure can touch upon community infrastructure investments, training and employment opportunities, and social, economic, and environmental impact mitigation. Capacity-building could be promoted alongside local economic development plans adapted to post-mine scenarios. Overall, mine investments in human capital and infrastructure should be sufficiently redistributed to local communities and designed to meet local development needs and solidify community self-sustainability. Diversification reemerges as doubly important for growth, at both local and national levels, as mines reach the end of their lifecycles, inevitably breaking the cycles of commodity dependence (Bastida, 2014; Farooki and Kaplinsky, 2014).

In the short-term, results from the interviews suggest that greater incorporation of non-transactional community exchange into mining company’s operations would be beneficial. Action with the community should emphasize education around the mine, including its operations, expected lifespan and environmental impacts. Furthermore, transparent communication of intended social services and community development initiatives is needed to address the dissatisfaction within the community. Clear pathways for dialogue, whether formal or informal, should also be implemented as part of a larger effort to directly bridge the community and the mining company, building trust, at the very least. Engaging expectations by keeping community members informed about the expected life length of the Biharamulo mine will be crucial in stimulating positive social transition (Owen and Kemp, 2013).

#### 7.5. Study limitations and future research

The expected life length of the mine under the new ownership is short, estimated to three years. However, there was considerable uncertainty about the future of the gold mine when the researchers visited the site, as potentially successful explorations could extend the mine life. This situation leads to one leading limitation of the study. Because of the concurrency of the change of mine ownership and scale, any changes expressed by the interviewees cannot be contributed to one cause or another. The researchers remain agnostic as to whether the scale, the ownership, or in fact the limited expected life length of the mine was the crucial factor in spurring the community feelings expressed in the interviews.

The study suffers from a few additional limitations. First, it captures these communities in the process of transition. Unfortunately, no study was done prior to the transition, which could have helped to inform changes in community perceptions. However, future studies could focus on capturing community perceptions as the mine moves through its next phases, including potential life extension, closure and post-closure processes. While some respondents expressed a wish that Barrick return to operate the mine, this shall not be taken as evidence that the

community members were content with Barrick while Barrick was still the owner of the mine. Because the study was done post-transition, this is outside of the study design.

A second limitation is the sample size of the study. Future studies could focus on conducting more interviews, which would allow statistical analysis of the data. A larger sample size could also glean a more representative sample of the communities, and more demographic data would allow exploration of differential mine impacts along factors such as gender, age, or economic status. Furthermore, the introduction by hamlet leaders to households during the visitation process may have biased discussions, especially when vocalizing grievances against corruption or power interests. It should be pointed out, however, that hamlet leaders were not present during the actual interviews.

Third, having identified some points of tension after the mine transition, there needs to be more research on the social relations and institutions surrounding these communities as mechanisms and pathways to address change. Thus, more in-depth stakeholder and institutional analysis surrounding the mine and the community is needed. For example, further research into the political system within Mavota can be helpful in demonstrating how interests in the village are represented.

The existence of grievances allows for “constructive opportunities” to transform grievances into positive changes and peace (Bond, 2014; Hammill et al., 2009; Rios et al., 2015). Rather than a simple management or addressing of concerns, there is an opportunity to build new pathways for dialogue in the shared mining-community space based on a deeper understanding of how the mine transition has affected communities.

#### Declarations of interest

None.

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