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Foreign direct investment and poverty alleviation in Tanzania: a case of Bulyanhulu and Geita Gold Mines Limited in Kahama and Geita districts

Nyankweli, E.M.

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Research methodology

Overview

This chapter will present the research design employed during the field work and the data sources used to achieve the research goal of analysing the direct and indirect impacts of FDI in gold mining on local livelihoods and the regional economy. The data gathering methods included semi-structured interviews, focus group discussions, key informants, review of existing mining legislation and informal conversations.

Livelihood analytical framework

A better understanding of the impact that gold mining FDI has on local livelihoods can be gained through the livelihood analytical framework (LAF). Livelihoods are understood as a collection of activities performed on a daily basis with the goal of meeting basic needs, such as food, housing and securing monetary income. These activities include production of crops, rearing livestock, making handcrafts, seasonal and permanent wage labour as well as remittances. In other words, it is the interaction of livelihood strategies with the natural environment in a particular spatial identity called region (De Haan, 2000a).

Livelihoods are secured through a set of assets and resources called capitals; multiple capitals are combined in different strategies, thus generating different types of livelihoods. The actual combination differs per each case, but there are several commonly distinguished types: human capital (labour, also including skills, experience, creativity);

natural capital (land, water, forests, pastures and minerals); physical capital (food, stocks, livestock, jewellery, equipment, tools and machinery); financial capital (money in a savings account at a bank, loan or credit); social capital (referring to the quality of relations among people and institutions, such as government, NGOs, CSOs and mining companies). Following the concepts of entitlement (Sen, 1981), claims (Chambers and Conway 1992) and access (Blaikie *et al.*, 1994), it is important for actors to have the ability to use capitals at reasonable costs, when needed and desired. Land can be rented, water and forests can be communally owned; a plough can be borrowed or hired; food can be obtained--but the main issue is securing access to capital.

According to Blaikie *et al.* (1994), each social group, household and individual has a unique capitals access profile, which depends on the rights granted by tradition or law and the way these are exercised. The actors--social groups, households and individuals--decide on the basis of their access profile. The capitals access profile is not set in stone and may change over time.

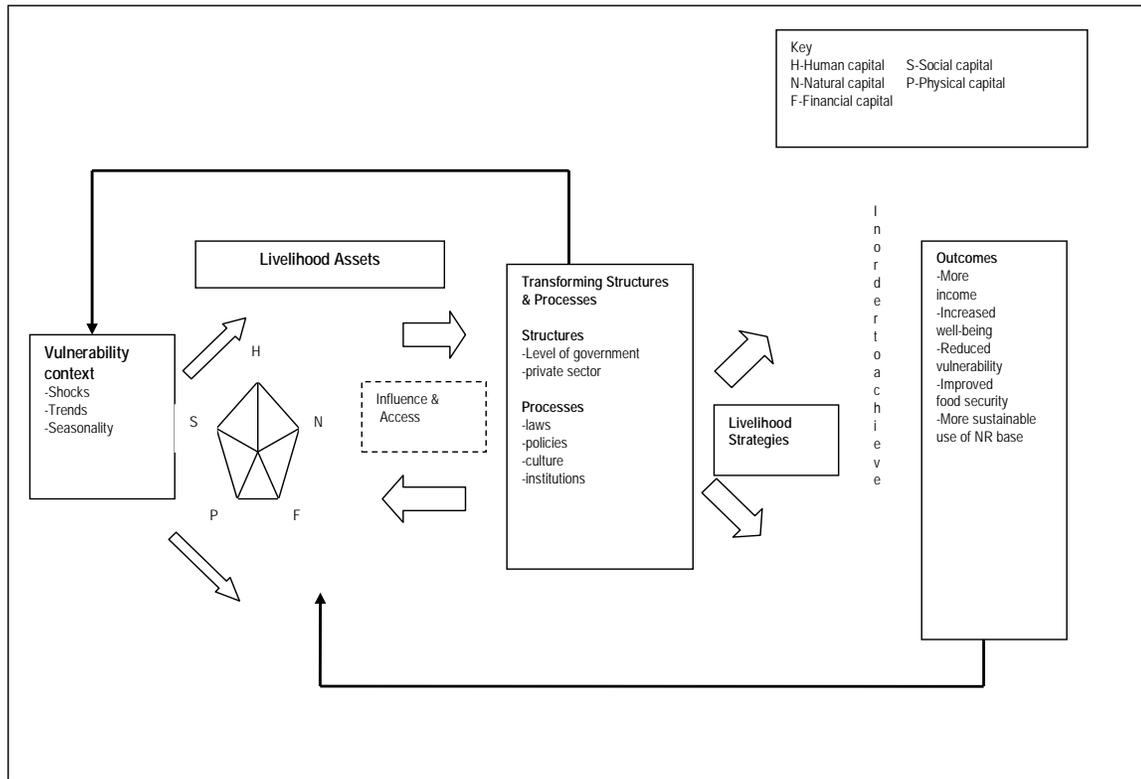
Livelihood can be considered sustainable when the outcome of the processing of different capitals is meaningful in terms of providing adequate well-being and viable in terms of protecting people against shocks and stresses. Shocks are violent and occur unexpectedly (e.g., flood or earthquake); while stress is less violent but lasts longer (e.g., drought or seasonal shortages). Both impact the five forms of capital. Shocks and stresses can result from economic hardship, war, diseases and rapid population growth. Livelihoods do not only depend on access to capitals but also on how the use of these capitals is framed in the wider social, economic, political and cultural contexts (Dreze & Sen, 1989).

Livelihoods are becoming increasingly diverse, as individuals and households pursue multiple occupations, also in multiple areas (De Haan & Zoomers, 2003). Livelihoods analysis enables exploration of the social-ecological systems or the relationship between people and their environment (Ingold, 2000; Davidson-Hunt & Berkes, 2003). Such analysis relates to choices and strategies, capacities that people have to enhance their quality of life and their capabilities to confront their social-ecological conditions and

improve their well-being. The analysis sheds light on the limitations that households and individual may face in realising their livelihood choices in changing contexts. Further, it helps highlight the diversity and heterogeneity of livelihood strategies at local level and illuminates their relations with macroeconomic policies. It is understood that the gold mining industry is complex and dominated by multinational companies. This does not mean that it automatically causes disruption of livelihood and non-sustainable pathways of local livelihoods. Rather, the mining benefits can be harnessed and utilised to improve community's abilities to cope with and shape appropriate livelihoods strategies. For example, by providing employment opportunities and implementing CSR initiatives, gold mining companies can enhance community access to better health services, education, safe water supply and improved infrastructure. This ultimately improves household income and thus diversified rural livelihoods. This complex web of assets, access, capacity and capability offers the households and local institutions layers of resilience that enable them to deal with waves of adversity (Glavovic *et al.*, 2002). Resilience implies the capacity of a system to deal with disturbances, ultimately reorganising in order to retain the same functions, structure, identity and feedbacks prior to the disturbance (Walker *et al.*, 2004).

Ellis (2000) summarised livelihoods as a set of assets (natural, physical, human, financial and social), activities, and access (mediated by institutions and social relations). The combination of assets, activities and access enables (or hinders) household to develop various livelihood strategies and each has different outcomes (Figure 3.1). A livelihood strategy refers to plans or techniques for securing means for living, and it is influenced by a given cultural context. Livelihood strategies include nurturing social networks and engaging in community level work, which builds social capital and enables diversity to be secured and sustained (Bebbington, 1999; Sen, 1999).

Figure 3.1 Livelihoods framework



Source: Adapted from Ashley & Carney (1999).

The household as unit of research and analysis

Scientific research on Africa often considers the household as the basic unit of social analysis. However, as the ongoing scientific debate indicates, the concept of the household is rather complicated and difficult to combine into one clear definition (Van Vuuren, 2003). Variations between communities make it more complex (Corbett, 1988). Van Vuuren, Corbett and also Chant (1998) questioned whether the search for a universal definition of household was feasible or desirable. Households are not ‘natural’ units with fixed forms and meanings across space and through time but are socially constructed and inherently variable (Ibid.). The term ‘household’ covers a wide range of residential forms, groupings of people and functions, thus making it impossible to devise a universal definition of ‘household’ (Beall *et al.*, 1999).

Evolving through multiple life cycles, households change shape and form over time. Conventionally, households are defined as spatial units characterised by shared residence and daily reproduction, primarily cooking and eating. Madulu (1998) described the household as a unit comprising a person or group of persons who live together in the same compound/homestead (but not necessarily in the same dwelling unit), have common housekeeping arrangements and answer to the same head of the household. The head of the household is a person living in the same household that is acknowledged by the other members as its head. This person holds primary authority and responsibility for household affairs, primarily economic and cultural (Ibid.). However, in the context of mining neighbourhoods, the above definition of household is not really satisfactory because some members may spend significant amount time in other areas far away from the mine (e.g., cultivating crops, going to school or simply residing at another location). Such households are more fluid than the standard household, and to determine membership one would have to take into consideration where various members live most of the year and how they themselves define their primary household (Potts, 1997).

What constitutes a household? In an attempt to capture the spatial dimension highlighted above and to answer to the needs of this study, a household is defined as (1) all individuals who at the time of the survey were considered to be resident in the same house or compound as the head of the household, and (2) the family members living in the rural area/home or in the city, as far as they had an impact on the household's activities (production, consumption, reproduction and livelihood). Despite changes in lifestyles and living arrangements resulting from mining investments, the household is still an important socio-economic unit. The household is an important unit of analysis in livelihood, poverty, vulnerability and social security research (Dietz & Mulder, 2005).

Research design, sampling and operationalisation

The research was conducted in two mining sites within Lake Victoria Greenstone Belt, the GGML and BGML neighbourhoods, located in Geita and Kahama districts respectively. The mining sites were purposively selected from the Sukumaland (*SU*) Greenstone Belt (Chapter 1 and Map 1.1). BGML is located in Bugarama Ward and is surrounded by seven villages, while GGML is located in two wards, Kalangalala and Mtakuja, and harbours 13 villages. The villages considered in the study were those within 20 kilometre radius from the mining sites; four villages were sampled from each site (in GGML Nyakabale, Nyamalembo, Nyankumbu and Ihayabuyaga villages, while in BGML, Ilogi, Bugarama, Igwamanoni and Kakola villages were included) (Table 3.1).

Table 3.1 Districts, wards and villages involved in the study

District	Ward	Village	N	%
Geita	Kalangalala	Nyankumbu	66	20.5
		Ihayabuyaga	42	13.0
	Mtakuja	Nyakabale	35	10.9
		Nyamalembo	21	6.5
Bugarama	Bugarama	Ilogi	20	6.2
		Bugarama	47	14.6
		Igwamanoni	51	15.8
		Kakola	40	12.4
Total			322	100.0

Source: Survey data, 2008.

The respondents at GGML were selected through stratified random sampling. An equal number of respondents were chosen from each of the four villages involved in the study, whereby the households were categorised in three groups according to prosperity (high, medium and low income), as identified by community members in focus group discussions at the beginning of the survey. Each income categories had an equal number of respondents (60). Thus the total pool of respondents who participated in the survey for GGML is 180 (the same type of selection was used for BGML) (Table 3.2).

Table 3.2 Criteria for respondent income categories

Criteria	Low income strata	Middle income strata	High income strata
Capital (business scale)	Petty business (50,000-500,000 TZS)	Medium scale (500,000-5,000,000 TZS)	Large capital (5,000,000- 10,000,000 TZS)
Labour	Casual labourers (selling labour to other groups)	Hiring low income persons	Hiring both low and middle income persons
Assets	Few	Moderate	Many
Land tenure	No land or very small plots of land	Own small plots of land	Have larger plots of land
Housing	Live in makeshift or temporary houses	Permanent housing and or renting	Permanent houses and own rental houses
Employment	None/ informal petty activities	Employed in companies or own medium scale business	Self-employed and own a large business
Political influence	Less-influential	Moderate	Influential
Social services	Inadequate access	Moderate access	Adequate access

Source: FGD, October 2007.

In both locations, respondents were identified based on the level of prosperity of their household. High income was defined as having substantial capital for conducting business (shop, renting house[s], pub and/or large herd of livestock). Low income household was defined as one that depends on casual labour, does not own a house and works for food (locally known as ‘hand to mouth’ or *kijungu jiko*—meaning that if they do not work they cannot eat that day). A medium income household is characterised by an average income and most of such households are made up of employees of the mining companies (FGD, October, 2007). The ward executive officers and respective village executives were instrumental in providing guidance and information on locations within their areas of jurisdiction. At the end of the survey, 322 respondents were successful interviewed, whereby 21.7% were from the high income group; 34.8% were from the medium income group and 43.5% were from the low income group. Observations indicated that in some villages—especially in BGML (Ilogi, Bugarama and Igwamanoni)—members of the high income category refused to participate in interviews,

stating that they had participated in several similar interviews in the past but have yet to see any practical use from the results, this incident did not harm the overall results as similar responses were captured through key informants and focus group discussions (Table 3.3).

Table 3.3 Household distribution in income strata by village sample

	Village	Household strata			Total
		High income	Medium income	Low income	
Nyakabale	Count	3	24	8	35
	% within village	8.6	68.6	22.9	100.0
Nyamalembo	Count	7	13	1	21
	% within village	33.3	61.9	4.8	100.0
Nyankumbu	Count	22	10	34	66
	% within village	33.3	15.2	51.5	100.0
Ihayabuyaga	Count	34	5	3	42
	% within village	81.0	11.9	7.1	100.0
Ilogi	Count	0	2	18	20
	% within village	0.0	10.0	90.0	100.0
Bugarama	Count	0	24	23	47
	% within village	0.0	51.1	48.9	100.0
Igwamanoni	Count	0	16	35	51
	% within village	0.0	31.4	68.6	100.0
Kakola	Count	4	18	18	40
	% within village	10.0	45.0	45.0	100.0
Total	Count	70	112	140	322
	% within village	21.7	34.8	43.5	100.0

Source: Survey data, 2008.

Research questions and operationalisation

The overall research goal is to analyse the direct and indirect impacts of gold mining FDI on local livelihoods and the regional economy. To achieve this goal, the thesis aims to answer three major research questions, which are further subdivided into subquestions (see Table 3.4 below and also Annex A1).

Table 3.4 Research questions

Research questions	Subresearch questions	Question variables
(a). What is the contribution of the gold mining sector in Tanzania?	(i) How does gold export fare as far as national income is concerned? and How much foreign exchange trading is realised from the sector compared to other sectors of the economy?	<ul style="list-style-type: none"> - Gold export versus other export products - Export trends between 1999-2008 - Other intangible benefits
	(ii) Taxation: What are the minerals related tax systems and revenues in Tanzania?	<ul style="list-style-type: none"> - Types of taxes for gold - Tax policy agreements for mineral resources - Royalties - Corporate taxes - Land taxes - Lease rental - Comparative analysis of pre-reform and post-reform mining legislation
	(iii) Revenue: How much revenue accrues from gold mining and from what sources?	<ul style="list-style-type: none"> - Estimates of revenue - Sources of revenue - How are the revenues administered - Public perceptions of gold mining revenue

Research questions	Subresearch questions	Question variables
	(iv) Employment: How much opportunity does the sector offer, in contrast to small-scale mining? What is the nature of the employment opportunities generated by the sector?	- Skills and technology transfer - Direct and indirect employment
	(v) Income: What are the income differences between large-scale and small-scale mining?	- Income differences between LSM and SSM
(b). What are the effects of gold mining on livelihoods in LVGB?	(i) How is the livelihood of the community in the LVGB?	- Perception of livelihood among the local communities - Attributes of livelihoods of local communities - Perception of poverty
	(ii) What are the perceived socio-economic impacts of gold mining on local communities?	Local Communities and Migrants - Income (employment or unemployment) - Housing - Family organisation (relocation/networks) - Prostitutions - Crime rates - Drug abuse - Migration - Change of land use.

Research questions	Subresearch questions	Question variables
	(iii) How has gold mining changed local livelihoods?	<ul style="list-style-type: none"> - Accessibility to livelihood assets - Livelihoods strategies - Land use - Crop choices - Land alienation
	(iv) What shocks and stresses are associated with mining activities in LVGB?	<p>Environmental</p> <ul style="list-style-type: none"> - Land degradation - Loss of vegetative cover - Land conflicts - Shortening of agricultural fallow systems - Bio-diversity (birds, animals and plants) - Water pollution - Dust (palatability to livestock and people) - Chemical/gases/fumes - Black smoke - Noise (blasting, drilling etc.) & vibrations (abortions in livestock, cracking of walls, stress and discomfort) - Vehicle and machine movements - Heap leaching - Ore and waste rock handling <p>Health</p> <ul style="list-style-type: none"> - Respiratory diseases (asthma, silicosis, tuberculosis, bronchitis, lung problems) - Eye diseases - Skin diseases (rashes) - Occupational hazards - Diarrhoea - Sexually transmitted diseases (in particular HIV/AIDS)

Research questions	Subresearch questions	Question variables
		<p>Social cultural and economic</p> <ul style="list-style-type: none"> - Prostitution - Income disparities (access to housing, food and other amenities) - Child labour - School leavers - Crime - High populations density - Land alienation
(c). What are the links between gold mining and local economic development?	(i) What are the mining companies' CSR strategies, delivery approaches and practices?	<ul style="list-style-type: none"> - Improvement of settlements (water, health, education, transport, sanitation) - Basic service delivery (private or commercial, public utilities, latrines, waste management, etc.) - Stimulate local economy (individual, micro-, meso- and co-operative development) - Business development services - Skill developments (training and vocational centres) - Warehouse facilities - Freight infrastructure - Local governance (land use conflicts, environmental control, balanced land use and maximising spill-over effect of mining investment, community participation)
	(ii) What is the state of public-private partnerships?	<ul style="list-style-type: none"> - Corporate social responsibility (practices, perceptions & its management) - Planning development and management of physical infrastructure (education, health, water, energy, roads, finance and credit,

Research questions	Subresearch questions	Question variables
		housing)
	(iii) How strong is mining companies' 'crowding effect' on other institutions in LVGB?	<ul style="list-style-type: none"> - Linkages between local government, community based groups and private sector in managing existing resources, jobs and promoting the economy of the area - Local control of resources - Human resource development - Institutional and physical capacities

Data sources and collection

Secondary sources

The majority of secondary sources for the literature review were found on the Internet, specifically on Web sites dedicated to community development, CSR, corporate citizenship, FDI, and sustainable mining development. Some key Web sites include the Mining, Minerals and Sustainable Development (MMSD) project sponsored by the Institute for Environment and Development, AngloGold Ashanti and Barrick Gold Corporation. Also literature from the Ministry of Minerals and Energy, Tanzania Chamber of Minerals and Energy, University of Dar es Salaam, NBS, ESRF, REPOA, IRDP and the Parliament of Tanzania (BUNGE) was used. Tanzania's mining legislation was downloaded from the Web site of the Government of Tanzania.

Primary sources

Primary data was gathered through 322 semi-structured individual interviews and 10 focus group discussions. For each mining areas, five focus group discussions were held, with six participants per group (in total 60 respondents). The respondents included representatives of the mining community, district officials, NGO representatives, ward executive officers, village executive officers and villagers.

Data collection methods

Interviews

The semi-structured interviews--the primary data collection tool in my research--were based on a set of core questions, but allowed for some deviation from these questions in order to explore relevant subtopics that emerged during the interview process. This approach allowed for efficient collection of qualitative data. The benefit of semi-structured interviews is that, in addition to a formal questionnaire, additional questions are derived during the interview from a series of core guiding questions (Table 3.4). Furthermore, semi-structured interviews enable the collection of identical bits of data and thus triangulation of data.

The question order proved to be very important for obtaining quality responses. Generally, the interview started with a general introduction of the person's background, including such details as profession and region of origin. Within the communities and the representatives of the mining corporations, the vast majority of respondents were very accommodating and provided carefully thought-out answers (except for select cases at Ilogi, Bugarama and Igwamanoni). Often, difficult topics--related to the effects of gold mining on the livelihoods of local communities--were introduced by the respondent themselves, indicating that it is an important subject that weighs on their minds. However, several respondents employed in the mining companies and ministries were not so co-operative, refusing to meet face-to-face. On two occasions I was asked to leave a written copy of the questions. The responses to the questions were poor--often left incomplete or entirely blank. On another occasion, I was given a copy of the 1998 mining legislation and instructed that I could find all answers to my research within. Fortunately, these were only a few isolated instances, and I was able to conduct interviews with other respondents in similar positions to compensate.

Key informants

According to Valadez & Bamberger (1994), 'A key informant is an individual who, as a result of his or her education, experience, or physical or social position in a community, has access to information about the functioning of society, the habits of its people, or

their problems and requirements'. Also in my research, key informants--teachers, village executive officers and former small-scale miners—were an essential element of the research process. As active members of the community, they could provide information on issues of concern to the Sukuma, including the impact of large-scale mining on their neighbourhoods. In the beginning phase of the research process, the contribution of other key informants from the district authorities in Kahama and Geita district headquarters helped me set the cornerstone for the thesis.

Case studies

Recording individual experiences of older members of the community was central to my analysis of the influence of large-scale gold mining on rural livelihood of LVGB residents. I intended to locate persons who were small-scale miners prior to the recent reforms as well as other community leaders who were involved in community relations with mining companies. Initially, I expected to interview older respondents; however, through the course of the research I discovered that most respondents (and therefore most adults) had some experience in mining activities. These case studies enabled me to ascertain the dynamics of large-scale mining and how communities were affected by this new environment.

By selecting the case study approach, I could uncover the history, everyday activities and relationships between different actors in mining neighbourhoods. I employed different interview techniques and analyses to construct the cases. Smith (1997) has argued that analysis of interviews should focus not only on motivations and reasons, but also social identities and how these are constructed within the social settings in which people live and work. Case studies of aspects of everyday life reveal social dynamics and the complexity of ongoing social processes. They highlight how everyday life is patterned by social relationships and the networks to which people belong (Vijfhuizen, 1998). According to Yin (1989), case studies are generally a preferred strategy for 'how' and 'why' questions, when the researcher has little control over events, and when the focus is on contemporary phenomena within a real-life dynamic context, which are constantly changing--even while conducting the research. Techniques used in case studies include

gathering life histories (biographical and oral history interviews), such as analysis of crucial life experiences (Plummer, 1997), as well as analysis of social networks (Mitchell, 1969). Also, focus is placed on how networks (especially in the web of kinship) evolved over time, and how different households, state agencies and relationships interlock.

The approach of this study focuses on changing lifestyles (which is part and parcel of reforms in the mining sector) and how they affected livelihoods in GGML and BGML neighbourhoods. I also sought to establish close daily contact with people from these neighbourhoods, in order to have a better context for the data gathered from interviews (Spradley, 1997). The thesis also focused on taking account of events associated with large-scale mining development and the typical daily realities in mining neighbourhoods, which was accomplished through the in-depth interview approach (as described by Bolding [2005]).

Focus group discussions (FGDs)

I organised several focus group discussion sessions with a variety of stakeholders: youth from Bugarama village, former small-scale miners, local business persons, individuals involved in community politics and management as well as employees of large-scale mining companies. Gathering participants for focus groups was easier than I originally anticipated. In Kakola village, it was a matter of sitting down with the businessmen for evening coffee. Six men formed the discussion group, but others who were listening from a distance also contributed their views from time to time providing a valuable contribution (their interruptions sometimes clarified a point that was exaggerated or underemphasised). I met with youth in Bugarama village at the local shop where they often gather. After a few minutes, several young persons agreed to participate in the group discussion, and over 40 other youths listened in. When visiting Ilogi and Igwamanoni villages, group discussions included members of the community that had raised various community issues in the village chairman's office. This included village leaders, farmers, mine employees, former small-scale miners, and *mama lishe* (women food vendors).

At first, I was apprehensive about the venue—the village chairman’s office—for the focus group discussions, but in both cases I found that the respondents felt comfortable expressing their opinions on sensitive subjects. (This can be explained by the fact that the village chairman acts more as elected facilitator than authority figure.) The same strategy was used in GGML, arranging meetings and discussions in coffee places, local pubs and village offices at Nyakabale, Nyankumbu, Ihayabuyaga and Nyamalembu.

Field experiences

Prior to my departure in the field I anticipated several limitations that potentially could hamper my research effort: the language barrier (I do not speak Sukuma), obstacles inherent to being an outsider, the minimal budget, transport difficulties and the reluctance of representatives of the mining industry to meet with me. For the most part, the above concerns were overcome or proved unfounded. The language barrier did not prove to be a major obstacle. Having lived in Sukumaland (Mwadi Mine Shinyanga) during my primary schooling, I had prior knowledge and experience with the community, which made it easier to communicate ideas in a simplified manner. However, it was my hosts (former IRDP students working in Geita and Kahama district councils) that proved to be invaluable in facilitating communication. They acted as Sukuma language and cultural interpreters during interviews and assisted me in finding transport and accommodation. With regards to overcoming the obstacle of being an outsider, my assistants introduced me to the local government authorities, who in turn introduced me to the community members and helped organise meetings.

Means of transport included public minivans, hired motorcycles and local *dala dala* bicycle transport. Arriving on bicycle proved quite amusing to local residents and served as icebreaker upon arrival. Staying in local guesthouses also proved useful as it allowed me to stay among the communities and engage in informal discussions at the nearest pubs and evening coffees in the village centres. Mining and government officials were reluctant to meet because during the fieldwork period (from October 2007 to January 2008) mining was a hot topic in the public domain and in parliament. This was due to the signing of a new contract for the Buzwagi mining project in London by the Minister of

Mining and Energy. This was contrary to the promise given by the ruling party's presidential candidate during the 2005 electoral campaign that no additional mining contracts would be signed until existing mining legislation is reviewed, in order to assure win-win solutions. Thus, the mining agenda was dominated by critics of the government, including opposition members of parliaments. I was in a difficult situation and I even thought of changing my research subject: every official I approached for my study seemed to shy away. I decided to remedy my approach by starting to work with the community instead of officials and mining company representatives, until the discussion calmed down. This strategy worked well, and by late January 2008 it was easier to approach the same people who ignored me during my first visit for fear that my study was politically motivated.

Data analysis

The quantitative data was analysed using the programme Statistical Package for Social Sciences (SPSS) (Griffith *et al.*, 1998), to generate the descriptive analysis of the situation of households. This data was supplemented with content analysis of information gathered through focus group discussions, key informant interviews, press clipping, desk reviews and observations. The descriptive analysis was explicitly developed in the context of applied research with the aim of presenting specific information needs and to highlight outcomes and offer recommendations (Lacey & Luff, 2001). On the other hand, the qualitative data analysis provided clear and systematic responses by respondents on key concepts. It also helped identify the stages when a particular result was obtained from the data, which allowed me both to analyse the concept under scrutiny and to examine the new ones that emerged in the course of the research.

Changing livelihoods in Sukumaland

This section provides information on the livelihoods in Sukumaland as background to the rest of the study carried out. The Sukuma belong to the Bantu group of peoples who migrated to the area from around Lake Chad centuries ago. Trekking through the Congo River basin and across Lake Tanganyika, they finally settled south of Lake Victoria

(Madulu, 1998). At the beginning of colonial rule, the Sukuma had already started to intensify agricultural production due to population pressure (Meertens *et al.*, 1995). Before independence, about 30,000 Sukuma had already settled in Geita and many others moved to the neighbouring districts of Kahama, Bariadi, Maswa and Meatu (Malcolm, 1953; Meertens *et al.*, 1995). The migration was motivated by the search of new agricultural land and pastures for livestock, a trend that continues to this day. Currently, the Sukuma agro-pastoral families occupy large areas of land in Kagera, Tabora, Rukwa, Mbeya, Pwani and Mtwara regions (Kikula *et al.*, 1996). Because they are the dominant ethnic group in the Sukumaland Greenstone Belt, some knowledge of the social and political organisation of the Sukuma is instrumental to understand the changes in livelihoods in this area.

According to Gottfried & Lang (1961), the Sukuma preferred extensive agricultural methods to intensive, although the situation did change due to population pressure and growing awareness of market opportunities, especially for cotton. Until the Second World War they largely lived in a subsistence economy. Their lifestyle changed with exposure to improved transport, communication and the development of the local markets. The peasants used to grow millet, cassava (during periods of famine), groundnuts, sweet potato, maize, sorghum, rice, legumes, grams, sesame, sugarcane and vegetables. The literature recorded cattle populations of between 8 and 40 heads per household (Cory, 1953). Goats, sheep and donkeys were also kept. Donkeys were used for transportation before the advent of modern means of transportation. Communal ownership and grazing of land combined with unrestricted individual or family ownership of stock resulted in low productivity and land degradation (Gottfried & Lang, 1961).

The Sukuma were organised into chiefdoms, which were further grouped into districts. The chiefship was a hereditary office, although after the Second World War a system of elected chiefs was introduced. These elected chiefs came from a lineage of immigrant non-Sukuma families (Cory, 1953). These outsiders were selected for their objective arbitration of Sukuma affairs and were thought to perform this function better than local Sukuma. The chief's powers rested in magical-religious functions and position as

supreme judges. The chief also enjoyed considerable social status from his wealth as well as from his ability to administer the affairs of the people. He commanded wealth of resources from the cash income derived from crops and cattle. The chief's wealth was important for provision of services to his subjects and for entertaining functionaries and guests at his residence.

During British colonial rule, the chief's functions were administrative and judicial on the local chiefdom level, where he presided in courts and levied taxes. Initially he also served as liaison with the central government, but this was disbanded after the creation of the African Native Council, which took over many of the chief's deliberation and taxing function (Cory, 1953). The chief had an advisory board consisting of members of a few important families, which were hereditary posts. The board had the important role of electing the chief's successor among the sons of the chief's sisters, but became less important after the introduction of the African Native Council. Subchiefs, on the other hand, increasingly gained in importance as the link between villages and their headmen. This post was created by the chiefs in order to have a man of authority between chief and headmen. The subchiefs could hold court in their subvillage; appeals could be carried higher up to the court of the chief.

The village or *gunguli* used to consist of scattered homesteads, rather than a closed village, and was ruled by a headman. In the Sukuma tradition these were sons of the chiefs who under rules of the matrilineal succession could not succeed their fathers. As the population surged these headmen were helped by assistant headmen. Also the headmen lost their jurisdiction after the establishment of the African Native Councils, even though they still had considerable influence in their villages. The headmen were assisted by elders (*ihane*), one of the major factions in the village the other faction being the youths (*elika*). The elders controlled the internal affairs of the village and even the headmen, but they were not elected representatives of the people. They exercised consultative roles during disputes and other matters concerning the village.

The *elika* were principally supporting each other in agricultural pursuits and were controlled by a leader, *nsumba ntale*. He was of great importance for anyone who wanted to have work done in the village. Just like the other local traditional functions, the role of the *nsumba ntale* also diminished due to political reforms introduced by the colonial government. However, the *nsumba ntale* could join the village council and coordinate his activities with the youth groups. In the past, the *nsumba ntale's* office was responsible for allocating agricultural land and organising social activities in the village (e.g., dances, funerals, weddings or mobilising for communal work). It was, therefore, important that the *nsumba ntale* was elected and did not inherit his post. He was elected by the village council or by members of various societies, after consultation with village elders.

At the household level, individual members cultivated grains, tobacco, cotton and other cultures (Cory, 1954; Gottfried & Lang, 1961). No one owned land outright, but all members of a household had the right to the harvested fruits of the land they cultivated (Gottfried & Lang, 1961). Elders hinted that men had customary rights to harvest cassava and millet, while women had the rights to maize, sweet potatoes, groundnuts and beans. In polygamous households each wife had her own plot for growing food for her family, although she also helped her husband in the cotton fields. Agriculture was the mainstay of the family and the symbol of social identity.

According to Abrahams (1989), even after independence the Sukuma continued to live in well organised neighbourhood group, in order to help each other with work and maintaining law and order. The neighbourhood groups are commonly known as *nzenzo* in Sukuma. The neighbourhood groups are organised at village or subvillage level and constitute an important source of labour. Neighbours collaborate in agricultural production in local cultivation or threshing teams which do the work for individual members in the team. Sometimes the team members also help each other during hardships and emergencies. The neighbourhood groups are under the *nsumba ntale*, who continues to exercise the function of organising assistance, agricultural work and social activities (Madulu, 1998). Given the fact that Sukuma agriculture was both land extensive and labour intensive, the neighbourhood groups became very important institutions.

Agro-pastoralism continues to be the main mode of securing livelihood among the Sukuma, i.e. engaging in extensive agriculture and keeping large herds of livestock (Kikula *et al.*, 1991). The hand hoe is the dominant agricultural tool, although ox ploughs and tractors are increasingly being used. The most important food crops are maize, millet, sorghum, cassava, paddy, sweet potatoes, various types of legumes and vegetables. The main cash crop is cotton; however, it has not been very successful in recent years, due to declining prices and inefficient marketing (Mwaipopo *et al.*, 2004). Recently, rice has been slowly supplanting cotton as the cash crop of choice. Trade in agricultural products is flourishing, primarily by selling rice and purchasing maize.

The traditional land tenure system still dominates life in Sukumaland. Traditionally, all land belonged to the chiefs; subjects had right of use and enjoyed considerable security of tenure (Abrahams, 1967). There are five ways to acquire land: one is through clearing land and uncultivated areas of former forests; second is by allocation of all relinquished land holding; third is through inheritance from one's father or close kinsman; fourth is by allocation of the land control authority (village council) in a cultivated area; and last but not least is through the land market (Madulu, 1998).

The most common strategy for acquiring land is through inheritance. According to tradition the eldest son is granted the entire property, to prevent the fragmentation of the original holding (Wilemski, 1994). Even with this type of inheritance, no one in the family is denied the right to use the land: the eldest son serves as primary custodian in absence of the elders. Inheritance procedures in Sukumaland are based on social solidarity that holds together the family and the community at large. It plays a substantial social role as system of economic security for the family (Madulu, 1998). However, several factors strained the traditional land tenure system and consequently made it inadequate. These factors include population pressures, dwindling land reserves, scarcity of land and the market economy. Each factor had its unique influences, which conflicted with the traditional land tenure system (Madulu, 1998).

According to Madulu (1998), the ‘villagization policy’ gave village councils the authority to allocate land. This is the reason for the emergence of new subvillages with people moving back to their traditional farmlands. There are two forces at work: first, the desire of people to stay close to their farms, and, second, the intention of the original owners of the land to recover confiscated land. These forces were manifestations of population pressure on land allocation.

Madulu (1998) observed that villagization increased population density and distance to the farms. This had re-shaped people’s dependence on agriculture and farming practices, such as declining and/or abandoning land fallowing as a method of restoring soil fertility. People also acquired land through buying, hiring or borrowing from friends. Similarly, farmers who owned inherited land acquired more land by seeking land elsewhere through new forest and public land clearing (Madulu, 1996). Most public land formerly used for grazing had been transformed into farmland due to high demand for land. Under these conditions peasants were not motivated to invest in intensive land use and land conservation, due to ambiguous land use rights (Madulu, 1998). Fisher (2008) found that the severity of land scarcity in Sukumaland depended on the extent of population pressures and land use competitions between different social and economic activities. This is attributed to the lack of available arable land, poor land use planning, and land alienation to private and large-scale mining companies. This left peasants with an uncertain future as much of the arable land was being confiscated for mining purposes (Mwaipopo *et al.*, 2004).

Traditionally, wealth differentiation was centred on agricultural performance. Large families were common—when food was ample—and many poor families sold their labour in exchange for food. Madulu (1998) observed that among the Sukuma life centred on the cultivation of cereals. Given the level of technology and type of tools, having a large family was important as it provided the labour required for producing sufficient quantities of food and also producing surplus for the cash market. However, in recent years, the literature indicates that many Sukuma are not comfortable with the conditions for agriculture and see no future in it (Madulu, 1998). This is because of lack of capital,

shortage of labour, land scarcity and old age as older people can not afford the hard labour to earn living in agriculture. Ownership of assets—primarily referring to owning land, cattle and a house—has become an important indicator of personal success (Madulu, 1998). In the Sukumaland, rich people are those who own large tracts of land and many head of cattle. Owning cattle offers enough capital for purchasing additional land or the possibility of hiring labour. Other measures of success include building a modern house or having a shop. These norms are a clear shift away from communal indicators of wealth and towards individual indicators.

It is apparent that the Sukuma are fast expanding into non-agricultural activities (Fisher, 2008). There was some non-agricultural activity in the past, but only for a short period. Increasing scarcity of land and additional exposure of youth to the outside world (through education and travel) have contributed to the development and diversification of non-farm activities (Mwaipopo *et al.*, 2004). There is clear competition between non-farm activities and farming for the available labour resources. The fact that labour availability is an important constraint on agricultural development in an environment of large families is enough to attest to growing competition between farming, livestock keeping, trading, education and mining (Madulu, 1998; Mwaipopo *et al.*, 2004). Transport and accessibility are additional preconditions for the development of non-farming activities (Mwaipopo *et al.*, 2004). According to Madulu (1998), population growth has accelerated land fragmentation and diversification of activities. The demand for basic needs within the family also encouraged people to adopt non-farming activities (Madulu, 1998).

Common non-farming activities include brewing beer; providing services (milling, retail shops, tearooms, selling firewood); selling second hand clothes (*mitumba*); selling fish and vegetables (sometimes water); trading in livestock and livestock products (meat, milk, hides and skins, chickens, eggs etc.); and small-scale mining. In some cases, trading foodstuffs (maize, rice, cassava, millet and groundnuts) is also considered a non-farm activity. Mining is an important non-farming activity for those with no other resources than their own labour. Most people who participate in mining are young primary and secondary school leavers and those who have extensive experience travelling to urban

areas. Women also participate in non-farming activities, though often in traditional family roles, such as cooking, collecting firewood and fetching water. The non-farming activities related to those traditional roles are brewing, selling firewood, pottery, sewing, canteens, and providing food. Mining is done by migrants. Elders reported that the majority of youths now prefer to engage in trading rather than agriculture. Investment in livestock is declining while investment in housing improvements and trading is on the rise.

Large-scale mining companies are relatively new to Sukumaland Greenstone Belt and are an important source of labour opportunities. Most miners are migrant men from other parts of the country and villages outside Mwanza and Shinyanga regions. Mining activities are considered destructive and have already resulted in serious environmental problems. The continual expansion of mining activities is depriving more persons of land, forcing them to shift from agriculture into small-scale mining, trading or provision of services to mining communities. Others migrate or work as labourers for other farmers.

Multinational mining companies, business entrepreneurs as well as many thousands of persons seeking a better life and riches are looking to profit from Sukumaland's mineral wealth (Fisher, 2008). This process has transformed local market dynamics and is straining the country's governing capacity. Mining localities are associated with very mobile populations who connect distant regions with each other as well as make links between rural and urban areas, through mining, trade and consumption. The ethnic diversity of mining locations is a clear indicator of this connection (Table 2.1). The entry of multinational companies transformed the dynamics of mineral sector development and also increased pressures on land and mineral resources claimed by small-scale miners and on land inhabited by local communities. These processes continue to stir controversies and conflict: there is ripe tension over the distribution of revenues between central and local government and divisions between sections of local government. This tension has exasperated the already weak capacity of domestic governance structures and has contributed to poor governance processes. These changes have profoundly transformed the livelihood landscape in Sukumaland Greenstone Belt.

Population, livelihood and poverty in mining neighbourhoods

In analysing livelihoods and poverty issues in BGML and GGML neighbourhoods, it is important to understand the demographic structure of the household, because precisely the household is the nucleus of production and consumption in the community.

Table 3.5 Ethnic diversity by mining neighborhood

Ethnicity	GGML		BGML	
	Count	%	Count	%
	Sukuma	85	51.8	40
Muha	13	7.9	17	10.8
Mhaya	12	7.3	21	13.3
Chaga	12	7.3	26	16.5
Nyiramba	7	4.3	4	2.5
Zinza	6	3.7	9	5.7
Nyamwezi	5	3.0	10	6.3
Masai	4	2.4	9	5.7
Sambaa	3	1.8	6	3.8
Ngoni	3	1.8	2	1.3
Nyakyusa	3	1.8	1	0.6
Jita	2	1.2	4	2.5
Kurya	2	1.2	2	1.3
Luo	2	1.2	2	1.3
Gogo	2	1.2	n/a	n/a
Pare	1	0.6	3	1.9
Zanaki	1	0.6	1	0.6
Hehe	1	0.6	1	0.6
Total	164	100.0	158	100.0

Source: Survey data, 2008.

Demographic structure

According to the survey of the two selected mining neighbourhoods, average respondents' family size is 4.6 persons, with a standard deviation of 2.1. However the neighbourhoods of GGML have a slightly smaller family size of 4.4 persons compared to the 4.7 persons of BGML neighbourhood. These figures fall slightly below the national average family size of 4.9 persons for mainland Tanzania (NBS, 2002) (see Table 3.6).

Table 3.6 Average family size by mining neighborhood

Statistics	GGML	BGML	Total
Mean	4.41	4.73	4.57
N	164	158	322
Standard deviation	2.232	1.842	2.053

Source: Survey data, 2008.

As Table 3.7 shows, the gender composition ratio was 1:0.18, i.e. 85% males and 15% females, which is contrary to expectations if one takes the 2002 census into account. This is because mining work is labour intensive and usually attracts young male migrant labourers (also some women engage in mining related activities).

Table 3.7 Gender distribution of respondents

Sex	Frequency	%
Male	274	85.1
Female	48	14.9
Total	322	100.0

Source: Survey data, 2008.

Formal education

Almost two-thirds (58.4%) of respondents are primary school leavers. Twenty six percent have attended ordinary level secondary school, while very few advanced to secondary school (5.6%), college (5.9%) or graduated from university (3.1%) (see Table 3.8). Three percent are illiterate, which is far below the national average of 25% (NBS, 2002). This is attributed partly by the fact that the Household Budget Survey is six years prior to my 2008 survey, and there have been some policy changes (namely, the national campaign for compulsory and free education for all school age children) as well as the fact that migrant workers travel extensively and have more knowledge and experience.

Table 3.8 Highest education obtained by respondents

	Frequency	%
None	1	0.3
Primary	188	58.4
Sec O-level	86	26.7
Sec A-level	18	5.6
College	19	5.9
University (graduated)	10	3.1
Total	322	100.0

Source: Survey data, 2008.

Characteristics of houses and housing facilities

The physical characteristics of houses provide an impression of the living conditions in mining neighbourhoods; they also offer an indication of income that is invested in housing and infrastructure, such as water and electricity. Observations indicated that the proportion of houses with corrugated iron sheets, tiles and asbestos is 58.4%, while the rest are grass thatched. GGML neighbourhood fair better, 68.9% of houses have corrugated iron sheet roofs and roughly a third (31.1%) has grass thatched roofs. BGML neighbourhoods are almost evenly split down the middle, 53.5% have corrugated iron sheet roofing while 47.5% have grass thatched roofing (Table 3.9). The apparent affluence of GGML residents compared to BGML residents can be explained by the urban nature of Geita Town and its vicinity. Inhabitants of Bugarama Ward (the location

of BGML) seek to provide for their necessities from other towns: Geita, Kahama, Shinyanga and Mwanza. Thus, economic activity remains concentrated in GGML as more transactions and reinvestment are carried within it. The opposite is true for BGML; the residents earn money in the neighbourhood but spend it in other places including GGML. Both neighbourhoods are above the national average of 43% for corrugated iron sheet roofing (NBS, 2002).

Table 3.9 Housing characteristics by mining neighborhood

				Iron sheets, asbestos, tiles	Grass thatched, mud
Mining neighbourhoods	BGML	House roofing materials	Count	113	50
			%	69.3	30.7
		House floor materials	Count	56	106
			%	34.6	65.4
		House wall materials	Count	112	50
			%	69.1	30.9
	GGML	House roofing materials	Count	75	83
			%	47.5	52.5
		House floor materials	Count	50	105
			%	32.3	67.7
		House wall materials	Count	58	95
			%	37.9	62.1

Source: Survey data, 2008.

In terms of wall building materials, 53.1% of houses are made of bricks while 46.9% are made of mud supported with poles (Table 3.10). Also, these numbers are above the national average of 25% (NBS, 2002). However, there is big difference between the two: the GGML neighbourhood has majority brick wall houses (70%), while the BGML neighbourhood is picture opposite, the majority of houses (62.7%) is constructed with mud and supported with poles.

Table 3.10 Wall building materials

Building materials	Frequency	%
Bricks	171	53.1
Mud and poles	151	46.9
Total	322	100.0

Source: Survey data, 2008.

About 40% of the population use water from unprotected sources, such as wells, springs, dam or lake. This is of particular concern in mining neighbourhoods due to risks from mercury and cyanide poisoning (Table 3.11). These figures are below the national average of 45% (NBS, 2002). Again BGML neighbourhoods are worse off: nearly half of its population relies on unprotected water sources, compared to 24.4% in GGML neighbourhoods.

Table 3.11 Major sources of water in households by mining neighborhood

	Mining neighbourhoods			
	GGML		BGML	
	Count	%	Count	%
Piped water in/outside the house	22	13.4	3	1.9
Pipes water in the community	38	23.2	16	10.1
Private well (protected)	4	2.4	7	4.4
Public well (protected)	60	36.6	45	28.5
Unprotected source (well, spring, dam, lake, etc.)	40	24.4	87	50.1
Total	164	100.0	158	100.0

Source: Survey data, 2008.

In both communities, the overwhelmingly dominant (with over 95%) source of fuel for cooking is firewood and charcoal (Table 3.12).

Table 3.12 Major sources of energy in households by mining neighborhood

	Mining neighbourhoods			
	GGML		BGML	
	Count	%	Count	%
Firewood and charcoal	156	95.1	153	96.8
Paraffin	1	0.6	4	2.5
Electricity	7	4.3	1	0.6
Total	164	100.0	158	100.0

Source: Survey data, 2008.

Regarding access to electricity, the figures are slightly higher than the national average of 12% (NBS, 2002), with 16% of the population connected to the grid. No large difference was noted between GGML (15.8%) and BGML (16.5%) neighbourhoods. Miniscule proportion indicated using diesel generators and solar panels. Electricity is mainly used for lighting and operating domestic appliances, such as refrigerators, radios and television sets.

Livelihood activities at the mining neighbourhoods

In both mining neighbourhoods people earn their livelihood in different ways, with mining related work but also with crop farming, livestock keeping, beekeeping, remunerated employment, food services, shops and bars and other business activities. Apart from the BGML neighbourhood where employment in other sectors was reported at 23%, the majority of the population are farmers or peasants (36%). Residents of GGML neighbourhoods were observed to primarily depend on agriculture (54%) for their livelihood, with a preference for crop farming. The percentages for other non-agricultural activities were much lower; only business was more substantial with 15%, the rest falling under 10% (employment in mining 6%, food service 3% and small-scale mining 7%). Observations indicated that Livestock keeping is done in both neighbourhoods; however, the survey recorded only tiny percentages, 4% in BGML and 2% in GGML neighbourhoods (Table 3.13). Generally, employment in the mining sector is less than 10% because the population lacks the necessary skills and the required higher level of education.

Table 3.13 Major economic activities in large-scale mining by mining neighborhood

	Mining neighbourhoods			
	GGML		BGML	
	Count	%	Count	%
Crop farming	73	54	35	36
Livestock keeping	3	2	4	4
Beekeeping	1	1		
Employee in large-scale mining	8	6	3	3
Small-scale miner	9	7	2	2
Employee (other than mining)	5	4	22	23
Food service	4	3	3	3
Shopkeeper	5	4	5	5
Other business	20	15	10	10
Schooling	2	1	2	2
Disabled	n/a	n/a	1	1
Others	5	4	9	9
Total	135	100	96	100

Source: Survey data, 2008.

In crop farming, there was some diversification growing both for subsistence and cash generation. Food crops include maize, rice, sorghum, millet, potatoes, groundnuts and beans. The cash crops are cotton, sunflowers, sesame and tobacco. Rice and maize are increasingly becoming dual purpose crops, grown both for cash and food. Types of livestock include cattle, sheep, goats, poultry and donkeys. Irrespective of the main declared occupation, people tend to identify themselves according to their main activity during a particular period. Observations indicated that identity was influenced by economic activity, age and gender.

Summary

Chapter 3 discusses the methodological framework of this study, including the livelihood analytical framework, research design and operationalisation, the concept of the household as unit of analysis, the sampling process and research questions. It outlined data types and data gathering methods, methods of analysis and field experiences. It provides a historical overview of the Sukuma people and mining neighbourhoods (specifically GGML and BGML) describing their social and political organisation during pre-independence, post-independence socialist and economic liberalisation period. The chapter finally presents current socio-demographic data on the mining communities in the wake of large-scale mining development at LVGB and changing livelihoods over time.