

The Assessment of Mining Process Implementation and its Impact on the Community in case of Amans-Beni, Gindish in Kurmuk Woreda, and Shegol in Menge Woreda of Benishangul Gumuz national regional states, Ethiopia (2022).

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Introduction

Mining has been blamed globally for harmful and impoverishing effects. Most countries are rich sources of minerals, yet there is very little development, since miners, and those around mining sites, still live in poverty. The continent of Africa ranks first in the global production of a number of mineral resources such as gold, platinum, vanadium, cobalt, diamonds and chrome. Social impacts mining Activity can be both positive and negative (Lucia & Serenella, 2018). On the positive side, mining operations create jobs both directly and indirectly, transfer technologies and knowledge, and generate significant foreign exchange earnings, thus providing governments a financial base for the development of infrastructure and the provision of social services (World Bank, 2009). Mining (both industrial and artisanal) is also associated with environmental degradation and pollution which have severe health implications. The environmental degradation is manifested through effects on landscape and land use, spread of gold ore-related heavy metals such as Arsenic and lead to nature, discharge of Cyanide to nature, spread of Mercury from artisanal mining, or air pollution. The national mining implementation processes and practices is full of convoluted problems that ranges from weak transparency in issuing licenses to management of revenues from the mining resources.

On the other hand, there is grave human rights violations from use of internationally band chemicals like mercury and cyanide that causes repeated miscarriages and adverse health outcomes on the indigenous populations residing in the vicinity of the mining areas (DUBAF, GIRJA, CIHR, 2020). Added to this are the negative consequences of the mining expansion on the main sectors that drains active labor from the farming sector and increases susceptibility to food and nutritional insecurity. According to Ethiopia mineral sector assessment (2014) in Odo Shakisso Woreda, Oromia Regional State there are 18 small associations, 100 micro and small-scale enterprises as well as many cultural /Artisanal Gold Miners while

in Agale Saba Boru Woreda 32 Special Small Associations, 76 micro and small scale enterprises as well as many manufacturers engaged in traditional gold production. There are Two Types of Mineral Mining Activities running in the area. These are primary gold mining accompanied with crushing and grinding process and placer gold mining through washing. In Ethiopia, about 94% of ASM are operating informally whereas only 6% of them are legally operating across the country (Beyene, 2016). Social problems exist in many of the mining sites caused by theft of deposits and cross boundary movements in search of new deposit sites due to the diminishing resource of placer gold (Hagos, et al, 2016).

Another impact of mining is Environmental degradation which can be expressed in terms of air, water, sound and land topography quality are also worsening and there is complete drying of source waters, contaminations, blasting and dewatering in the villages of the communities. in Benishangul Gumuz Gold is produced in all the three zone administrations of Benishangul-Gumuz regional state. The areas that border Sudan and South Sudan, which include 9 of these 19 Woredas, are where gold mining and trade in gold are actively taking place. In the recent national study on prevention of corrupt practices in the mining sector (November 2019) by federal ethics and anti-corruption commission Benishangul Gumuz national regional state indicates 100% absence of conducting due diligence. the study indicates 83% agreement about absence of genuine consultation and negotiations with the community, 80% upon unfair in the transparent licensing process, 83% leaking confidential information about licenses and mining leases, 80% unethical and unfair process of mining site. Few people who pan for alluvial gold do so for more than six months at a time. Because the work is repetitive and only brings slow returns, it does not hold the attention of miners for long. Critical shortages and shortcomings of mining sites further deter long stays. For seasonal miners, agricultural seasons determined the time they can invest in mining.

Furthermore, The physical and social structures of the mining operation also play a role, and this is where changes in present practices can be observed compared to studies conducted until the early 2010s (Gezae, 2010). Two sites were visited in February 2020, Melahu in Sherkole Woreda and Dulshatalo in Kurmuk Woreda, and observations and accompanying interviews offer deeper insight into these practices. Similar to the mining sites in the Qeissan area, the two mining areas were located in poorly accessible areas without paved roads or telecommunication networks; electricity is only provided by generators (DUBAF, GIRJA, CIHR, 2020). This study have been conducted on the environmental, socio-economic and human rights impacts of mining on the affected communities living vicinity to the mining sites.

However, many of the studies focus on the positive impacts of mining, and they also do not discernibly touch mining effects on main sectors like agriculture, education. The studies also lack treatment of transparency and accountability mechanisms and gaps along value chain and supply chains that can perpetuate corruption within the sector. Therefore, the study integrate the negative socio-economic and environmental impacts of the mining process with the evaluation of transparency and accountability mechanisms so as to fill the gaps mentioned above. It also adds the impacts of the mining process on the main sectors like agriculture, and education. The overall objective of the study is to examine the negative socio-economic and environmental impacts as well as the transparency and accountability in the mining process of Benishangul Gumuz national regional states. Focusing on the specific objective such as; mining process, negative impacts of mining activities on the community and necessary inputs to policy makers in relation to the gap.

Some Empirical review of literature

The Africa continent harbors the largest concentration of minerals and presently is the world's largest producer of mineral commodities (ECA and African union, 2008). More than 34 African countries producing gold and other precious minerals (us geological survey, 2011), and the leading gold-producing African countries are Ghana, Mali, Tanzania, Guinea, Nigeria, and Ethiopia, etc. According to PACT's strengthening artisanal mining communities in rural Ethiopia project, artisanal miners in Ethiopian range from 500,000 – 1 million miners (Amhara regional state has the highest number) with specific particulars explained as; 62.5% are men and 37. 5% are women out of which 87.0% of women and 77.1% of men respectively have already been in mining business for more than 6 years. Out of men miners, 57.8% do extraction and out of women miners, 19.1% are service providers and 28.2% do a mix of all activities in the mining sites. 51.2% of miners have learned through employment as a daily laborer and 44.2% have learned through coaching of a family member, 63.4% of miners reported doing mining throughout the year, 43.2% of miners do farming; 25.8% have no other livelihood options, 24.6% felt they do get reasonable income that compensate their efforts. The same report shows that only 0.3% of mining sites have access to pipe water, 62.7% don't know how to treat water or the importance of it, only 9% of mining sites were reported to have latrines, 61.8% of accidents relate to poor mining practices or collapse of tunnel/shaft, health facilities are located minimum 5kms far from these areas. Ethiopia mineral sector assessment, July 2014, have found that, most Woredas in the region have ASM activity, and the majority is alluvial gold mining. There are some 74 associations in the region, as well as 56 licensed traders. Associations mainly produce the artisanal gold, but there are also individual artisanal miners who also play important roles in gold production. Women appear to take a greater part in the activities here, compared to elsewhere in Ethiopia. There is a shortage of water, as the rivers dry up in the dry season. During this period, soil is brought to house to be washed using the domestic supply.

Mineral production by company

mineral type	company producing the mineral
Gold and silver	MIDROC gold mines PLC
Limestone production	Dangote industries PLC, Derba MIDROC cement PLC, pioneer cement PLC, and Incihni bedrock cement PLC
Pumice	Dangote industries PLC and allied chemical PLC extractive companies
Marble	Sourish marble PLC, Alisha mining PLC, and Ayana marble PLC
soda ash	Abijata Shalla Soda Ash S.C
Other minerals (clay soil, gypsum, basalt, salt, sandstone and Trona)	Dangote industries PLC, Derba MIDROC cement PLC, Lucy salt production PLC, pioneer cement PLC, jam industries PLC, and abijata shalla soda ash S.C

Source: Ethiopian extractive industries transparency initiative (July, 2018). EETI final report for the year ended

Large mining companies, their locations and mineral types

Licensee name	License Number	Region/locality	Mineral type	Exploration activities
Stream, soil, rock chip sampling, trenching & Pitting, ground geophysics & intensive drilling	MOM\026-124\97	Benshangul Gumuz: Baruda-Bulen, Ablarus, Bahu Anjakoya, Yabanja & West Tangoy Localities, Metekel Zone	Precious, base & rare metals	Stream, soil, rock chip sampling, trenching & Pitting, ground geophysics & intensive drilling
	MOM\EL\352\2010	Benshangul Gumuz and Amhara: Mentaweha locality, Guangua/ Dibate Wereda, Agew Awi and Metekel Zones	Base metals, gold, iron and rare metals	
ASCOM Mining PIC	MOM\387-429\1999	Benishangul Gumuz: Shungu and Nazali	Gold and base metals	Stream, soil, rock chip sampling, trenching, aster image interpretation, ground & airborne geophysics & intensive drilling
Donia Gonda mineral resource corporation Limited	MOM/EL/4359/2009	Beneshangul Gumuz: Sherkole locality, Asossa Zone	Gold and base metals	Stream, soil, rock chip sampling, trenching, ground geophysics & drilling
Rayan Investment PIC	MOM\EL\251\2007	Benishangul-Gumuz: Oda Godere locality, Mengi & Oda Godere Weredas, Assosa & Kamashi zones	Gold and base metals	Stream, soil, rock chip sampling, trenching, ground geophysics & drilling

Source: World Bank (July 2014). Group Final Reports of Strategic Assessment of the Ethiopian Mineral Sector. Addis Ababa.

Materials and methods

The target populations of this study were households in the vicinity of the mining sites within the range of 50 kms radius. total population of the study were households of Amans-Beni, Gindish and Shegol areas living close to the mining operation sites (maximum of 50 kms away from the sites), and who bear the brunt of mining. the study applied purposive sampling to select mining sites, this was for the reason that, the most dominant mining Area in BGR relatively according to the report of Mining ministry, (2017 (<http://www.mineaction.org/>) and Via consultation with regional mining bureaus. The study used qualitative-Explanatory approaches, the study add a simple statistic tools for comparison like percentage. the tools such as observation, FGD(focus group discussion, Key informant interview and case study) where used exhaustively. Therefore, officials at regional, Woreda and Kebele levels have been purposively chosen as key informants to demonstrate and generate relevant data. Descriptive and content analytical approach was applied to assess the linkage between mining and the allied negative impacts in terms of socio-economic and environmental components as well as the transparency and accountability in the mining processes. Finally the study was used both secondar and primary data sources and types. In case of Analysis, Explanatory types of analysis were used for qualitative part of the data, such as illustration, elaboration, thematic methods and transcription and document review was the other part of analysis.

Location and Accessibility

Assosa is the administrative capital for the region and it can be accessed via the 750 km highway from Addis Ababa ‘Nekemte’ - ‘Ghimbi’ - Assosa. Alternatively, there is twice a day flight from Addis Ababa with Ethiopian Airlines. The roads from Assosa town to the proposed license area diverges at Komosha Woreda (35km NE of Assosa) and dry weather road further goes via Menghe, Amatselo(Shegol) the targeted mining site, Shirkole to Qizan. The area has a tropical hot type climate with a dry season starting from end of October to April and rainy season from June to end of October. Climate data from Assosa indicates the average annual rainfall is 1,222 mm. Average monthly rainfall ranges from 228 mm in August to 0 mm in January. The temperature varies from 25°C to 42°C with average of 32°C in most of the dry seasons. The highest temperature are recorded in March & April and most rain falls between August and October. The targeted mining site area is located in the western lowlands of Ethiopia and is characterized by undulating ridges, mountainous ranges and elevated areas. These mountainous ranges gradually increase in height from the north-eastern part of the concession to the south-east and south-west. The mountain slopes are steep and covered in loose scree. The lowest height in the north eastern reaches 930m and gradually increase in elevation towards south east (1411m) and south westward (1162m). With respect to the studied areas, the highest pick topographic land ranges area culminated at ‘Gulle’ Couples Mountain Chains.

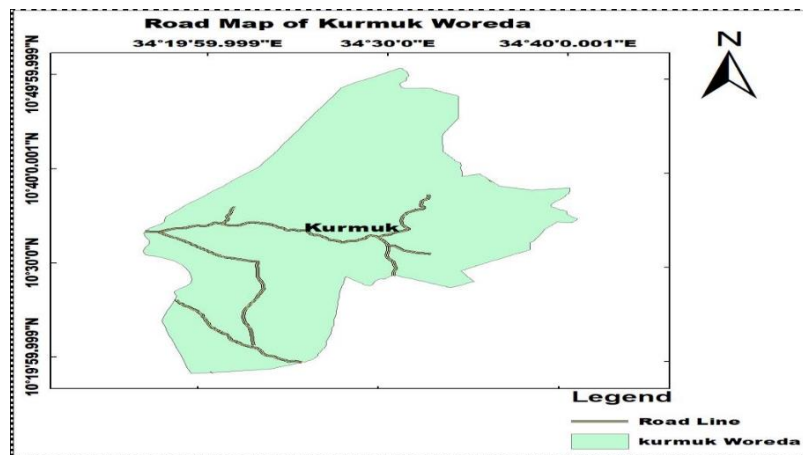


Diagram 1.Road Maps of Kurmuk Woreda

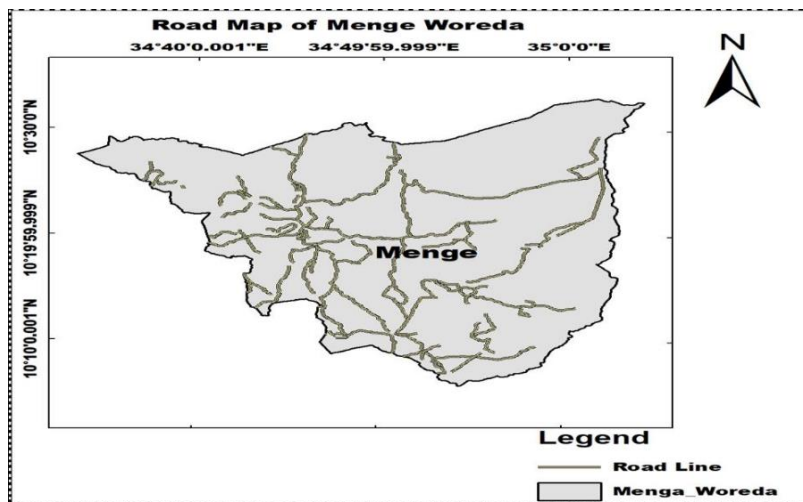


Diagram 2.Road Maps of Menge Woreda

Hydrology of the area

Most of the streams in the area flow northwards. The major rivers in the Studied areas are ‘Tumet’ and ‘Rogie’ which flow all years long which flows to Abay River situated in the east of the propos concession areas. The land surface generally down slopes to the Abay River indicated by the water courses of the aforesated and other rivers.

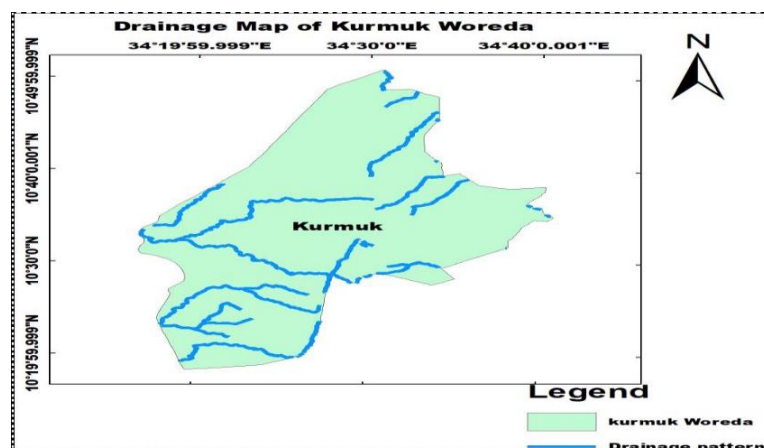


Diagram 3.Drainage Maps of Kurmuk Woreda

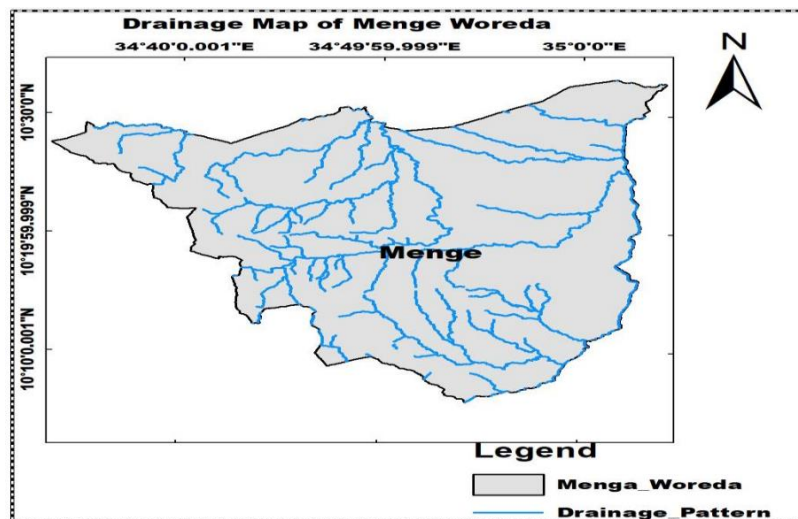


Diagram 4. Drainage Maps of Menge Woreda

Analysis, interpretation and discussion

Assessing how the mining process is implemented

Since 1992 the Ethiopian government has issued legal and regulatory frameworks, consistent with the new economic ideology of promoting private sector investment. on top of the FDRE constitution, the following are important laws, which determine and regulate mining operations in the country: mining proclamation no. 678/2010, mining income tax proclamation no 979/2016 repealed as per article 100/1/b of the federal income tax proclamation, council of ministers regulation no. 423/2018 repealed as per article 57 of the mining operations regulation, and transaction of precious minerals proclamation no. 651/2009. Environmental laws, which help to regulate and protect environmental impacts of mining projects, include environmental protection organs establishment proclamation no. 295/2002, environmental impact assessment proclamation no. 299/2002 and environmental pollution control proclamation no. 300/2002.

Summary of the legal framework of mining operation in Ethiopia

Legal framework	Observations
Federal income tax proclamation no.979/2016	Federal income tax proclamation
Transaction of precious minerals proclamation no. 1144/2019	To promote and regulate transactions of precious minerals
Mining operations (amendment) proclamation no.816/2013	To amend the mining operations proclamation
Mining operations proclamation no.678/2010	To promote sustainable development of mineral resources
Mining operations regulations (amendment) no. 124/2006 repealed as per article 57 of the mining operations regulation no. 423/2018	Council of ministers regulations on mining operations (amendment)
Mining operations regulations no. 182/1994 repealed as per article 57 of the mining operations regulation no. 423/2018	Council of ministers regulations on mining operations

Mining income tax (amendment) proclamation no. 802/2013 repealed as per article 100/1/b of the federal income tax proclamation no 979/2016	To amend the mining income tax proclamation
Mining income tax proclamation no. 53/1993 repealed as per article 100/1/b of the federal income tax proclamation no. 979/2016	o provide for payments of income tax from mining operations
Mining income tax (amendment) proclamation no.23/1996 repealed as per article 100/1/b of the federal income tax proclamation no 979/2016	To amend the mining income tax proclamation
Mining proclamation no. 52/1993 repealed as per article 82/1 of the mining proclamation no 678/2010	To promote the development of mineral resources
Council of ministers federal income tax regulation no. 410/2017	To amend the mining income tax proclamation

Source: Ethiopian mining industries transparency initiative (July, 2018). EEITI final yearly report. Addis Ababa.

Mining cooperatives

Small and micro enterprise (SME) and mining development groups. The amended mining operations proclamation no. 816/2013 has recognized four types of mining licenses and outlined limitations on the durations. The following table summarizes the types of mining operations and their pre-defined durations:

.list of types of licenses for artisanal to small- scale mining operations

Type	License period
Artisanal mining license	Up to 2 years not renewable
Small-scale mining license	Up to 10 years renewable for 5 years
Special small-scale mining license	Up to 10 years renewable for 5 years

Source: Ethiopian mining industries transparency initiative (July, 2018).

Further, with regards to the right of trading precious minerals, the transaction of precious minerals proclamation (no. 651/2009) provides that there are three types of licenses and two certificates as follows:

Summary for awarding license procedures

Stage No	Procedure
1. Information	The applicant enquires about the general information on the application procedures at mom.
2. Field visit	The applicant writes an official letter to mom in order to arrange for a geological visit at the relevant location (Woreda, region). MoM notifies the regional mines bureau of that particular area in order to request them to assist the applicant during the geological visit. The applicant defines the particular coordinates of the area subject to the application during the geological visit.

3. Applications	The applicant pays the applications fees, fills in the official application form for mineral operations license and other services and submits the application to mom along with the following documents: 1. ID card /passport; 2. Principal business registration certificate; 3. Evidence of the applicant's financial status; 4. Work programme (for reconnaissance/exploration)
4. Evaluation	MoM assesses the applications based on the following criteria: - Number of years the applicant has been in mining operation and directly/indirectly related experience with a maximum of 15 points; - Human resources capacity and experience with a maximum of 10 points - Financial performance with a maximum of 10 points; - Proposed project location and area coverage with a maximum of 2 points; - Objective of the proposed project in specific, measurable, achievable and time
5. Draft agreement	MoM decides to grant the license or not.
6. Letter and approval	a) If the application is not approved, the application code reference will be removed from the license records of mom.
7. Issue of license	A copy of the agreement is delivered to the applicant and another copy is delivered to the regional national states mines bureau.

Regulatory and policy barriers in the mining processes

The study assessed the regulatory and policy gaps/bottlenecks in terms of human rights and sustainability perspectives. To start with, proclamation no. 1/1995 recognizes a whole spectrum of human rights. The country has also ratified major international instruments that guarantee human rights. "All persons have the right to a clean and healthy environment" (proclamation no. 1/1995, article 44(1)). The constitution further reasserts that the government should work hard to ensure that all Ethiopians live in a clean and healthy environment. To this end, the design and implementation of development programs and projects are required to be carried out in a way that does not cause any major damage or destroy the natural environment. another law (proclamation no. 300/2002, article 3(1&2)) also states that no person shall pollute or cause any other person to pollute the environment nor a project, which has a negative environmental impact, shall commence implementation without environmental impact assessment and authorization (proclamation no. 299/2002, article 3). every enterprise engaged in the mining sector is required to undertake mining operations in such a manner that ensures the health and safety of its agents, employees and other persons, and as well as minimizes the damage or pollution to the environment (proclamation no. 678/2010). Against the strong provision of the constitution that prohibits any economic activity that may cause damage or destroy the environment, the above legal provision is loose, only demanding that enterprises minimize environmental damage and pollution. The provision opens a Pandora box for subjective judgment of the degree of tolerable environmental impact.

Nonetheless, the legal provision does not fully authorize citizens to say no for reasons they do not agree with the amount of compensation. It is up to the environmental protection agencies to decide on the disagreement. In terms of peoples' rights to participate in decision making and to give or withhold their free consent to activities affecting their lives, the law states that nationals have the right to participate in national development and, in particular, to be consulted with respect to policies and projects affecting their community (proclamation no.1/1995, article 43(2)). The law requires that before securing license for mining operations, registration of each application should be followed by a notice that has to be published on newspapers which have wider circulation (regulation no. 423/2018). On the basis of this notice, any person can file a written objection at the office of licensing authority within thirty days. However, the right to free prior informed consent involves permanent processes of negotiation between local communities and developers. The law does not require this; instead, it empowers the applicant to delimit the area for which the application is sought prior to application without the consents of legitimate occupants. The principles of sustainability demand not only understanding, planning and mitigating the impacts but also extend to limiting extraction of the natural resources so that irreversible impacts on the natural and social environments could be minimized. Such limitations should be clearly stated by the laws governing the operations and development of the sector. However, the Ethiopian mining proclamation does not put any restriction on operations except for mineral water extraction.

Assessing Transparency in the mining process

Corruption risks can arise at any point in the mining value chain – from the awarding of mining rights, mining operations and regulation phases to revenue collection and distribution phases – and take many forms, such as bribery of foreign officials, embezzlement, misappropriation and diversion of public funds, abuse of office, trading in influence, favoritism and extortion, bribery of domestic officials and facilitation payments. Globally, several multi-stakeholder initiatives have been established to encourage public disclosure of information. These initiatives aim to create platforms for debate and to empower civil society organizations to use the information and engage with the government for better transparency and accountability, and ultimately improved development outcomes. Programs such as the extractive industries transparency initiative (EITI), publish what you pay, the Kimberly process certification scheme, the natural resource governance institute and the revenue watch institute facilitate information sharing on natural resources to increase public awareness and spur demand for good governance. Ethiopia adopted the African mining vision (AMV) and EITI membership to enhance transparency in the mining processes.

the mining sector is governed by government decisions all along its value chain, including the decision to extract, regulation and monitoring of extraction activities, revenue arrangements (royalties, fees and taxes) and fiscal management of revenue resources (allocation and spending). Against this backdrop, key informants from the regional government sectors stressed the prevailing weak transparency in the mining processes as detailed below; In relation to issuing of licenses, there is risk of bribes by mining companies in return for issuing licenses, for issuing licenses more



Photos; Discussion with key informants: Menge and Kurmuk; Right to left respectfully

Quickly, or for specifying less-onerous license conditions. Key informants also confirmed us that financial data and other details on mining projects are not normally available to the public, besides, the key informants informed their worries and concerns of a risk that officials may secretly have ownership stakes in companies to which licenses are granted; acquire land for which a license application has been made; demand a share in mining companies or in their profits; and manipulate license registration to give themselves or their associates prior registration. Mining companies may also deliberately understate output and profit and overstate costs to reduce royalties and profit taxes. One of our key informant stated his observation as follows; “actual mineral output has been grossly under reported and the regional governments end-up losing millions in tax revenue which could be invested in much needed social programs and infrastructure”. “The majority of artisanal gold miners are informal and are not well integrated into the national bank system of gold purchase.

Assessing accountability in the mining process

The ministry of mining (MoM), and the environmental protection authority are the two most important federal institutions engaged in the management of natural resources and protection of the environment respectively. The main responsibility for mineral operations is granted by proclamation to the ministry of mines at national level. Among its responsibilities, provision of license and administration could be found. With this responsibility, the ministry grants license for companies for mineral exploration and development activities in the country. further, it administers the operations of companies awarded license for exploration and development activities, collects license fee, royalty, land rent, signature and production bonus, training fee, community development fund, penalties and others from mining companies. The environmental protection authority has been assigned the major responsibly of coordinating environmental protection activities and measures to ensure that the environmental objectives provided under the constitution are realized.

The study contacted regional bureau¹ leaders and representatives and probed them to explain issues revolving around accountability within the mining process. accordingly, the respondents² raised that there are no appropriate monitoring visits by Woreda experts on the mining sites and even cited some mining companies to own special military commando group that prevents any third party to assess their physical

¹ BGRS, Youth and women; BGRS, mining agency and BGRS, Environment and climatic change offices

² Kurmuk woreda mining office, agriculture and natural resources office

activities, for instance, Kurmuk mining company (the then ASCOM). Furthermore, study FGD participant at Kurmuk district expressed the accountability challenge as below; communities in vicinity of, several mining sites are tired of complaining about the social and environmental quos induced by the miners.

Assessment of negative impacts of the mining processes and practices

Loss of livelihood assets: Respondents³ of the household survey said that mining contributed to the loss of their basic livelihood assets. 22.2% of Household's explained that they lost their farm and grazing land, 27.8% of Household's lost their livestock due to associated shortage of grasses, 6.7% of Household's lost their permanent residence house due to encroachment of mining camps, 17.7% of Household's confirmed loss of their backyard and garden trees like mangoes and wind protection sheds. 6.3% of Household's confirmed that they either abandoned their farmland and converted into active mining plots or enforced to displacement due to encroachment and expansion of mining works in their vicinity losing their household parcel of agricultural and ancestral land.

Nutrition and family care: In study area Village leaders and key informant, women and children affairs stressed that traditional and small scale open pit miners are mostly dominated by poor women. Minerals are not always available at all places and the poor women are forced to search over long distances and vast fields to get a meager amount of gold rocks. It is not un-common that most women including early birth givers and pregnant and also adolescent girls to go over prolonged number of days ranging from three weeks to six weeks to search for gold rocks. During this time, they leave aside their infants, in such a way that children and husbands who might be deprived of food and care being separated from their mothers. As a result, children are mostly mal-nutritious and stunted and become ill and psychologically depressed. This particular in mining sites such Malahu and Kerima in Menge woreda. **Impact on education:** Focus group discussants informed us that youth adolescents and children are mostly engaged on finding gold and looking for daily cash income. For this reason, they can't attend schools regularly and obliged to terminate their schooling. Besides, since they travel long number of days they became absentees from schools which in turn deteriorates literacy rates of the community found in the mining areas. Household survey respondents also justified this perception in that 72.3% disclosed that mining as attributed to children school dropouts.

Land grabbing: Key informant respondents iterated that private mining companies demand additional hectares of land for camp construction in addition to licenses mining area. This is mainly to utilize the camp area for mining in addition to the main mine area. This in turn creates contestation interests.

Tenure insecurity: Focus group discussants revealed that farm households are always under fearful eviction or displacement upon successful finding of gold on parcel of land. in case of licensed artisan miners, members are mostly recruited from local areas and therefore make the farm owner their member of association and he participates on the mining giving a substitute or equivalent amount of money

³ Menge Woreda, shegol kebel participant

replacement of his occupied farm land in the



Animal died due to *cyanide contaminated waters* found in one of the studied area at *Kerima* mining sites *Menge* *Woreda*

case of large private miners, the farmer will be given a time period from 1-2 years to leave his parcel and collect belongings so that the company would start mining upon the farmland giving equivalent or very minimum sum of money by the developer. **Water condemnation:** Community and traditional leaders underscored their concern about pressing water scarcity both for human and animals. They explained that the mining sites are geographically facing water shortage due to their location as a dry land. Artesian and informal miners use water for cleaning processes on one hand and they unleash mercury and cyanide contaminated waters to the main streams. This causes water stress or scarcity for humans and animals due to partly contaminated water used for nothing and also people are forced to fetch water from very long distances to accumulate and save for both human and animal use.

Sexualized violence: Key informants at government institutions and focus groups participants at village level in all targeted sites confirmed us that long distance travel for gold search is also accompanied by multiplied rape and violence which could be culminated with marital crisis if gossips of alleged rape heard by husbands post returned home. **Prostitutions and cultural ruins:** In respect to the effects on the local culture, the project area population is dominated by a Muslim community so that the proponent should respect the culture of the community especially from sexual harassments on women. Also, the proponent should support the efforts of the community in the protection of the language, norms and values of the ‘Benishangul’ community from the pressure in the demographic change. However, focus group participants and community opinion leaders worried about the trending mushrooming of prostitutions and cultural adulterations. The mining sites are very far away from urban facilities like transport, marketing, hospitals, banking services among others.

The community surrounding and within the mining areas are partly migrants from highland and different parts of the country whom are single and separated from official marriage. This in turn stimulates transaction/commercial sex. focus group discussion held at ‘Shegol’, stressed their concern about culture from the influences of refugee, since there are a lot of refugees who are used to coming here to dig a bar of gold and they used to come with opium and other culture which is not related to our culture, and further excludes our people in their operation side, they do not give us attention even to negotiate with them, as concern our mutual benefits, so we fear to be the sources of conflict in future.



Photo: Partial views of children pouring water to wash the gold bearing material, Malahu, sherkole

Prevalent child labor: Contrary to the notion that artisanal and small-scale mining is hazardous and has characteristics that fit the definition of a worst form of child labor under ILO Convention No. 182 (International Labor Organization, 2005). The study team made observations grave child labor in the mining processes particularly in the BGR. Children involved ore extraction, to processing, and burning. Some children are also required to run errands, carry heavy equipment or materials, or deliver food and water to miners working deep within the mines. Young girls involved in ASGM often participate in wet and dry panning, extraction, and amalgamation. Girls are also often involved in domestic activities in and around ASM sites and processing areas. Boys on the other hand, are more typically involved in extraction and processing.



Photo : Photo showing a well dug for extracting gold resulting loss of lives, |

Chemical pollution: Various chemicals such as cyanide and mercury are used during ore processing. These chemicals constitute the major pollutants of surface and ground water. Chemical pollution could also occur through the misuse, mishandling and poor storage of explosives. Sulphurdioxide fumes from mining companies could also generate extensive chemical pollution. In addition to chemical pollution, heavy metals from mining operations contribute to water pollution. The presence of such heavy metals above a certain threshold can be injurious to human health and the environment, particularly aquatic life. furthermore, domestic liquid wastes from camping; oil leakages from vehicle maintenance, polluted water discharging from gold washing room to the downstream rivers and mercury contamination because the local miners employed mercury for gold concentration. Those are among the potential source of waste that pollute the environment. the main concern of the communities in the vicinity of mining sites at both studied areas have been potential cyanide pollution of surface and ground water resources by large-scale surface mining operations and mercury contamination from small-scale and illegal mining activities as learnt from key informant interviewing and FGD sessions.



Photo: A picture showing gold recovery by applying mercury without proper safety & damaged land because of mining activity |

Impacts on air quality: Impacts of mining on air quality are observed during each stage of the mine cycle, but the mining operations like drilling, crushing, hauling, collection, and transportation are the major sources of airborne emissions and pollution. Airborne particulates of major concern within the mining areas include respirable dust, Sulphurdioxide (SO₂), Nitrogendioxide (NO₂), Carbonmonoxide (CO) and black smoke. The activities that generate this particulate matter include site clearance and road building, open-pit drilling and blasting, loading and haulage, vehicular movement, ore and waste rock handling as well as heap leach crushing by companies doing heap leach processing. Dust may be emitted during site clearing, road construction, transporting people from the production to the town.



Photo: show the gold crashing and dust, Kurmuk, Gindish

Vehicles (excavators) and heavy-duty machineries for production of gold contribute to pollution of the air. Despite the standards set by the EC, WHO and EPA levels for the pollutant are 50 gm³, 70 gm³ and 70 gm³ respectively, the study didn't obtain results of air quality monitoring for dust whether its values far above or less than the tolerable international or national levels acceptable and detectable limits for health safety. Besides, huge deposit of the dust on the vegetation can make it unpalatable for both human and livestock consumption. Unfortunately, the mining companies have not put in place adequate measures to prevent harmful emissions of dust into the ambient air. Evidences from focus group discussion held at 'Gindish' site in Kurmuk revealed that the impact of dust in the mining place is manifested by the

occurrence of diseases like glaucoma, trachoma, respiratory diseases among others because of the effects of clouds of dust in the area.

Conclusions and recommendations

There are studies by other parties that investigated the negative impacts of mining on the main sectors particularly agriculture, education and social behaviors as for instance; Study by Kumar, D., Wata, C., & Muthuraman, M. (2021) indicated that education is the affected segment, growing the dropout rate and confining the future to mining only. Another study showed that mining has increased the presence of social vices such as prostitution, substance abuse, gambling, and incest, and general de-stabilization of families and livelihood (Darimani et al., 2013; Gualnam, 2008). The study by Hayes confirmed that mining affects vegetation, farmlands, livestock and aquatic activities through pollution leading to negative effects in agriculture and food security (Hayes, 2008). Mining tends to drive people away from sustainable livelihoods, for instance, farming to other livelihoods which may result in possible destruction of productive land resources.

This study has obtained the same directional effect of mining on main sectors and social vices and it exactly agrees with the studied results. The study by Beyene (2016), showed that miners travel long distances from their residential areas to the mining sites facing harsh climate, tiresome and risky operation. As a result, it is common to see the number of female artisanal miners is smaller than male artisanal miners. Besides, the placer of gold is being depleted and less accessible for them (Beyene, 2016). this study also confirmed that the majority of the respondents are males (88.9 % which means women's engagement in the business of mining is declining because placer gold is increasingly depleting and less accessible and miners are aggressively moving to rock mining (like digging/ tunneling too deep in the earth). in addition, miners have to travel long distances from residential areas facing harsh climate, tiresome and risky operation. this also agrees with the former studies result.

Concerning the issue of Regulatory; the Ethiopian legal regime fails to effectively safeguard individual's possessory right on the land allotted to them. Neither people are compensated for non-economic losses nor are their consents mandatory before eviction. The law has made it clear that compensation will be made only for properties destroyed and/or damaged by mining operations. In case of disagreement, the licensing authority may cause displacement of legitimate occupants against their consent. Moreover, regarding the finding on: transparency, "The majority of artisanal gold miners are informal and are not well integrated into the national bank system of gold purchase. They are simply selling their gold outputs in informal channels including smugglers swinging across borders or use side selling in the local markets, whichever is more profitable. informal artisanal population and integrate them the national transparency and oversight system". Which have alarm for future, increment on mining crime, decline in regional as well as national revenue.

Another interesting finding that key informants underscored was there are no social accountability programs targeting the mining sector vis-à-vis it is increasing contribution to the national growth and adverse impacts posed to the community for instance there are social accountability programs on agriculture, education, water, health and rural road. and also it seems necessary to customize special accountability tools like balanced score card, citizen reporting card, gender responsive budgeting and others for the mining sector that will enhance transparency and accountability systems. The socio-cultural

dimension includes cultural evils/vices like sexualized violence or rape, prostitutions, addiction with associated crimes and unequal gender power relations in decision making and disposition to armed attacks). the environmental dimension encompasses natural resource deterioration mainly water, forest, and land resources, chemical (use Mercury and cyanide). Another study finding including environmental deterioration, environmental related chemical pollution, noise, cultural and social related impacts. Generally, the study have assure that, from the up-bottom process of mining licenses, it have fail to tack in to the consideration for the futurity of the current generation, nor for the coming generation in both study regions (BGRS and Oromia), this was proofed by the following findings; In case of any licenses process there is EiA procedures, however, it lack a continues monitoring and evaluation, no co-operation among executive offices such as woreda and regional level executives. There is no project ever which have fail because of its EiA, all of the mining project have approved to not harm social as well as environment, in deed, the study have found boldly the implementation of Mercury and cyanide which was prohibited by national, regional as well as by the one of the international conventions which have signed by the country.

The regional policy and regulation have point out clearly that, any licensed body before it been licensed it should discuss with local authority such as kebel and wored for the approval of the project, but, according to the participant, they have assure that, in any discussion involving licensing of the project, they only consider the kebel Administrative and a few number form from the woreda, which does not be representative at all. For that matter, most of the project owner the used to promised for the local people for a little compensation, unfortunately, we didn't see anything, but damage, lack of water, chemical pollution and new disease, for our Area. When conducting thus interview, key informants told the researcher that the community wrongly interpreted this rule and fear that reporting environmental impacts could culminating terminations of the 30% benefit and can disregard them from the activities and that they are not dear to report any potential negative impacts. The study have found that, there are a lots of project which have been licensed without the willingness of the community such as Kurmuk(Kurmuk woreda) mining and one two other project in menge woreda. Finally, any project expected to solve at least a minimum problem of unemployment in its site, however, all of the study participant have point out that, no benefit stile, even the owners used come with workers from other in stead of employing the local one, which my point for future instability and, lack of transparency. The research also revealed that mining has active dewatering effects. In addition, gold mining and processing are significantly affect river system, contamination of water quality deterioration. From site observed and related literatures, the mining activity mainly gold extraction demand tremendous amount of water to separate the ore material from residues including cleaning and washing activities. most of the miners depend on either the existing river water or water points as water source where local community also use it for family and livestock consumption in turn pose water stress to dewatering in severe cases.

On the other hand, key informants from sector offices stressed that actual mineral output has been grossly under reported and the regional government's end-up losing millions in tax revenue which could be invested in much needed social programs and infrastructure. This include broad horizons ranging from lack of transparency in the management of royalty tax revenue and its ultimate reinvestment. they gave instance fact in which a given percentage of the royalty tax is usually collected by the regional government but there is no discrete social development or rehabilitation project funded by the tax revenue and when we try to cross validate the issue from the regional water and mining development bureaus, they

disclosed that royalty tax is managed at federal level and will be released to the respective Woreda, if a justifiable project concept is presented by the Woreda. Furthermore, it service as part of the regional indicator during annual budget allocation and approval. Besides, big private mining companies are nor regularly controlled and scrutinized for the total type and grade of the mining product and trucked at checkpoints since many of the authorities are linked in patron client system with kick back money and not to disclose what contents are loaded in the truck.

Recommendations

Socio-economic related: the government could reinitiate the program using scientific approach by identifying its gaps and enhancement of the good practices mainly in areas where mining activities run among other food insecure areas. This could be implemented in collaboration with development partners, NGOs in collaboration with local community mainly development committees whom are reputable experience. Thus, all applicable regulations in which the country signed and/or adopted internationally like ILO's child labor policies must be practical in that all concerned stakeholders at federal level specifically mom and MoLS as well as regional sectorial offices to ensure their practicability. moreover, as part of intervention enforce and support companies to conduct both human rights impact assessment (HRIA) and gender impact assessment of mining processes since women are highly vulnerable than men to negative impacts of mining of their mining processes (SWOT analysis).

Environmental related: an inventory study should be conducted especially on the mining areas the sooner possible time so that ratifying Miniamata convention by the country with associated controlling mechanisms or how to apply guidelines/procedures must be devised apart from supporting Companies and relevant government institutions to adopt International Mercury Cyanide Management Code. Usage of banned chemicals for extraction could also be resolved by way of provisioning of alternative chemicals which are not hazardous to human and the environment under the close supervisioning of appropriate professionals (well trained personnel from the mining companies) together with the regional or Woreda environmental protection authority. MoM or the regional government concerned offices in collaboration with financial institutions like DBE may provide sufficient money supply and better extraction and washing machineries through lease financing system by clustering of the existing artesian miners and associations working in the mining sites among others. the local mining and water development government office should enforce the miners to develop their own water source (bore hole or min-dam system) separated from local community intervention prior to issuing or renewals of mining license. In addition, the residue which has been discarded from the washing activity has been diverted to join the river course or being placed in the potential mining site which have the potential to contain hazardous chemicals having the capacity to pollute the existing water in turn will be no safe to use. hence from practical experience and proven success stories, all miners should have a delineated mining site having the necessary treatment plant with tailing dam to be constructed in such a way that the inner and outer layers will have sealed layers not to leak any substance in the surrounding whereby residues to be treatment properly (physio-chemically as well as biologically) prior to discharge in to water bodies.

Policy related: the effectiveness of engaging the local community mainly youth working with investors must be investigated in detail in that whether all members of a given association or youth groups have been benefiting from the integrated investment scheme employed in the mining areas. stringent law

enforcement as equivalent with tax bribing law by the government, bilateral revenue administration with neighboring countries is very important and should be practiced in sense of urgency.

Transparency and accountability: For mining Area and opportunity, most of the time Local police are often known to act on their own, and security forces, by and large, have impunity against their transgressions throughout the country. Special at regional down to the woreda and Kebel's, thus, the over come such kind of evil corruption, mining and mining related task have to be managed and executed by the standing committee, from federal, regional and local community. Mining and its impact on the local community it is very sensitive, however, the impact assessment, have to be Carrey out within closes supervision of general attorney(reginal and federal at least), justice office, and and executive bodies. There is a high risk of corruption in Ethiopia's land administration with petty corruption, land grabbing, corruption in the auctioning process, and state capture being common in the sector (Lindner 2014; Business Anti-Corruption Portal 2017). The country's legal and institutional structure, with regard to land administration, has been criticized for being unnecessarily complicated (Lindner 2014). The study have prof that, in which there is a widespread mining corruption in both region and no clear report of concern bodies in any activities of the mining process and its implementation, therefore, all of the mining activities, its implementation and impacts, should be re-investigated by the independent bodies once or twice a year in any region to assure the sustainability of the generation and coming generation together.

In other Benishangul gumuz regional state, the mining licensed process and approval, are implemented in close supervision of the regional president, which is now a day paving away for high risk of corruption and increasing the bureau-ocracy of the process, directly the root of the lack accountability and transparency, thus, regional mining agency have to tackler very things, in closes supervisions of anti-corruption, and general attorney at least at regional level. Avoiding such 'rent-seeking' behavior and ensuring that mineral discoveries make the best possible contribution to the welfare of Aboriginal communities involves negotiating effective contracts with mining companies and the effective management of the share of mining revenues accruing to the communities.

References

1. Burström, L., Elgstrand, K., Sherson, D. L., Nogueira, C., Thomsen, J. F., Fingerhut, M. & Clarke, E. E. (2017). Safety and health in mining: part 3. Occupational Health Southern Africa, 23(5), 18-23.
2. Central Statistical Agency (CSA) (2011). Ethiopia's Rural Facilities and Services Atlas 2011, Volume 8; Oromia Regional State.
3. Dejene Girma (2012). Environmental Impact Assessment in Ethiopia: Laws and Practices. PhD Dissertation, the University of Alabama.pp292.
4. Eccleston, Charles H. (2011). Environmental Impact Assessment: A Guide to Best Professional Practices. Chapter 5. ISBN 978-1439828731 Keili-et-al-March-2021-Policy-brief.pdf.
5. FDRE, House of Peoples' Representatives (2015). Definition of Powers and Duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation No. 916/2015.
6. Fromyhr, L. Review of Environmental Factors for 2012 Trenching and Drilling Exploration Programs ELs 6273, 6452 and 7673 Drake Region, North Eastern New South Wales. White Rock Minerals. www.resources.nsw.gov.au.Glassson, J.et al (1999). Introduction to Environmental Impact Assessment. 2nd edition. London.



7. MacKinnon, A. J., Duinker, P. N., Walker, T. R. (2018). The Application of Science in Environmental Impact Assessment. Routledge. Adola Gold Field, Southern Ethiopia. Gondwana Research, v.7, pp.481–488.
8. Mercury Initial Assessment Report, FDRE Ministry of Environment, Forest and Climate Change (Ethiopia, MIA 2018).Addis Ababa.
9. Ministry of Mines and Energy (2009). Environmental Guidelines for Mineral Operations in Ethiopia.
10. National Study on Prevention of Corrupt Practices in the mining sector (November 2019) by Federal Ethics and Anti-corruption Commission. Addis Ababa.
11. Research and mainstreaming directorate (2021). Saba Boru Woreda field report. Guji zone Odo Shakisso Woreda. Ministry of Mines. Addis Ababa.
12. The University of Queensland Occupational Health and Safety in the Resources Sector. (Course Notes). 4thJuly- 3rd September 2011. Brisbane, Australia.