JOURNAL OF INDIGENOUS KNOWLEDGE AND

A Review 0f Status and Challenges of Child Labour in Artisanal and Small-Scale Mining in Sub Saharan Africa: A Look Through Ethiopian Context

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ABSTRACT

Present Study reviews with the children involvement in the 'artisanal and small-scale mining' (ASM) in Sub Saharan Africa, and also tries to screen the situations of Ethiopia in the same context. To commence this review study the systematic synthesis methodology was used. Various concerned research articles, technical papers, reports and books were consulted and reviewed. Study shows that most of the ASM are located in the remote-poorly accessed locations. Use of rudimentary tools, traditional techniques, shabby mining sites and involvements of children for all mining activities is a common phenomenon throughout Sub Saharan Africa (SSA). Though few countries like Ethiopia the children's participation in ASM is by their own willingness yet most of the Western, Southern and Central African mining countries forced and bounded child labours were common. Working hours for child miner ranges from 8 to 16 hours per day, with ought holidays and proper rest. Poverty, high population, subsistence agriculture, lack of alternative source of livelihood and unemployment were the basic factors pushing people towards mining. Some specific cases like Natural calamity, political unrests and conflicts aggravates the situation. The payments for children range from poor to just survival; even this is widely misused by children. Education is the worst affected segment for child miners, growing the dropout rate and confining the future to mining only. Being hazardous and risky job child miners are facing injuries, casualties and even deaths due to the perilous terrain of sites. Highly unhealthy environment and drudgery leads sickness and various diseases among the children. Review confirms that the children with families are better and protected but single children are the worst exploited ones; boys suffer with low to now wages, over workload with no proper rest and physical and mental harassment while single girls besides all these also frequently face sexual exploitation. Bad habits like smoking, drinking, consuming stimulants and narcotics, gambling and adultery become common among the children. Though the situations of ASM in Ethiopia are similar in terms of location of mines, drivers for mining and bleak future of child miners yet the conditions are not so extreme in terms of control of armed militias or mining lords, exploitations, payments and blind future as found in other parts of Sub Saharan Africa. For betterment of children in ASM, registration and regulation of

such unites under strict state and federal government rules are must. Evening schools/ bridge schools, complete free education including mid-day/evening meal, and counselling of dropout children are strongly recommended.

Key Words: Artisanal and small-Scale mining, child exploitation, child labour, Child education, Ethiopia, Sub Saharan Africa

1. INTRODUCTION

Artisanal mining refers to the mineral extraction undertaken by individuals, small groups of individuals, or cooperatives working with hand tools or very basic forms of mechanization. They are mostly unregistered miners engaged in primarily gold planners concentrated mainly along major river (ILO 2019a). Small-scale or artisanal mining generally encompasses small, medium, informal, legal and illegal miners who use rudimentary methods and processes to extract more than 30 different mineral substances worldwide (UNEP, 2012). Small-scale mining also known as artisanal mining symbolizes the mining processes depicting two striking characteristics- rigorous labour and simple procedures. They could be defined under two categories- extraction of high price mineral like gold, silver and various valuable stones; and smaller and localized mining of industrial minerals and construction materials and pit mining (Hilsong, 2002).

In many parts of the world, artisanal or small-scale mining (ASM) activities are at least as important as large-scale mining activities, particularly in terms of the numbers of people employed (Hentschel et al. 2002). Globally, more than 100 million people depend directly or indirectly on artisanal mining for their livelihoods (WB, 2008), almost one million children are engaged in mines and quarries. A serious violation of children's right, which not only deprive from their childhood and education but also their safety and health at rick (ILO 2019a). Among the mining sector, it's the artisanal and small-scale mining (ASM) which poses the largest and most common concentration of child labours. Though the production from one unit of ASM may be quite small but the cumulative production from large number of units are there very huge. ASM supply one-fifth of total global supply of gold and diamond, almost one-fourth of global production of tin and tantalum, and 80% supply of global sapphire supply. It gives a direct employment to almost 40 million miners, a number which has doubled in recent years (IFMMMSD 2017)

The small-scale gold mining activities have played a role to reduce the poverty level of millions daily lives including 30 to 40% women participation (Ministry of Mining, 2012). Artisanal small-scale gold mining (ASGM) has been an important source of income for increasing the wealth of rural population by providing opportunities for alternative livelihoods; contributing to poverty reduction and for earning foreign currency (Bury 2004; Amunkete 2009). Several Sub Saharan

countries are largely banking upon mining, especially the artisanal and small-scale mining, for example Ghana, an important country in this regard, alone estimated 1.1 million people directly work in ASGM activities, representing nearly two-thirds of the country's total mining labour force. Much of this activity is considered "informal", "unregistered", and illegal (UNECAMAD-2011), The proportion of Ghana's gold that is mined through small scale gold mining has increased from 6% in 2000 to 23% in 2011 (Tetteh, K. 2011). ASGM, a growing sector, has a not only a significant influence to Ghana's GDP but makes an important source of employment and income for miners and their dependents each year. The annual increase in revenue from ASGM recorded 64% in formal market only (Ministry of Minerals and Mining- Ghana 2014)

But all that glitter is not gold, one of the darker sides of this glossy image is the mass scale involvement of child labours in ASM, which so often are not well cared, not well fed and not well paid. One of the most unsafe, unhealthy and unorganized works in the world in which children are entangled is mining, but still in Africa, Asia and Latin America, thousands of children are entangled in it (ILO 2006). In search of precious and semiprecious metals and gemstones children are working on the surface, on dry beds of water bodies, in rivers and lakes, and even underground tunnels, ditches, pits and mine shafts, etc. Always under unhealthy and dangerous environment. They perform all types of activities of mining and are mostly less to least paid (ILO 2019a)

Though ASM have its own merit and so many African countries wave promoted as an effective tool for poverty elevation and development yet by large child labour is perceived to be a serious problem, as it is believed to be destructive to children's intellectual and physical development especially that of younger children. This is the theory behind the child labour trap. If a child is employed all through the day, the child remains un-educated and subsequently has low productivity as an adult. So, child labour can directly contribute to adult unemployment in developing countries. A major caveat is that there is very little treatment of such long-term dynamic consequences of child labour (Annabel 2008).

No doubt there seems to be a unanimity among scholars for the criticism about the child labour and have a direr to wipe it out; but what alternative could be given to these unfortunate children living in remote forested or degraded areas, suffering with abject poverty and so often trapped in political and ethnic conflicts, and left with no alternative but mining for their and their family's survival, so that they may pursue their education for their bright future. In contrast Werner (2006) has his argument in favour of child labour. He stated that in many impoverished locales, child labour is all that stands between the family and unit and all pervasive, life threatening, destitution. To deprive these bread earners the opportunities to lift themselves and their immoral hypocrisy.

Just by being under aged and under paid these workers cannot be entirely rejected, they too have a right to survive. No one have a moral right to say that they cannot work, till no viable alternative is provided to them to survive. Stopping child labour without doing anything else could create more challenges.

Child labour in mining is a well-known phenomenon in all mineral rich countries of Sub Saharan Africa; there are local terms coined by the society and used for such child miners. Like in Niger and Burkina Faso they are known as '*orpaillage*', in Ghana they are known as '*galamsey*' and South Africa as '*zama-zama*'.

Ethiopia has a long and interesting geological history and so prosperous pockets of the deposits of precious metals and stones. Gold potentials sites are confined to Precambrian basement rocks known as Northern, Western and Southern greenstone belts. The Greenstone belts are supposed to be the rich deposits of gold, mined at various scale. Small scale gold mining has been an age-old economic activity in Ethiopia. Since the biblical period the placer gold deposit has been mined through traditional methods (Young 1999). Ethiopia has considered the small-scale gold mining as the new booster for economic growth. The government has started paying more attention to any scale of mining. Small scale gold mining legislations is promulgated to attract private investment to the mining sector in 2008 (Ministry of Mining-Ethiopia 2012). But the path for mining sector was not easy and faced contests due to high gold prices, political and ethnic conflicts, demographic disorder and fluctuation of international market and so on. It has also socio-cultural impacts including child labour, hampering of children's education, population displacement, accidents, group-rise of habits of consumption of liquor and narcotics among children, and other social disorders (Chala et al. 2020). The mining activity has resulted in prostitution, increase incidences of banditry, changes in indigenous lifestyle, and made competition among local residents for natural resources (Meisanti et al. 2012).

Defining child labour is a complicated challenge as there is a wide range of activities with even wider range of hardships and risks. To avoid contradictions the ILO definition was widely used by scholars. The ILO concept of child labour is derived from the ILO Minimum Age Convention No. 138 of 1973, which sets 15 years as the general minimum age for employment. But there is a condition-Children in hazardous work, that is, work that will likely harm the health, safety, or moral development of a child. In addition to children working mines, construction or other hazardous activities, this group includes all children below 18 years of age who work 43 hours or more per week (Appendix-I)

In 2012 the Ethiopian Government adopted the Young Workers' (14-18 years) Directive, which includes an updated list of hazardous occupations for children, including work in mines, glass factories, domestic labour, and on the streets. In addition, during the reporting period, the Ministry of Labour and Social Affairs-Ethiopia submitted a proposal to the Parliament to raise the minimum age for employment from 14 to 18 years. There is no law establishing compulsory education in Ethiopia. The lack of compulsory education may increase the risk of children's and young worker involvement in the worst forms of child labour (Liwanga, R. 2013; US Embassy, 2013).

In Sub Saharan Africa (SSA), including Ethiopia the number of child labours in unorganized, informal, illegal artisanal and small-scale mining sector is quite high and is growing every year. The complications and challenges of these minor miners were studied and discussed by some scholars in various isolated locations of this vast part of continent; reports by international organizations especially UN organizations were also published,

The activity of ASM is diverse in nature ranging from simple sand and stone quarrying to the large mining for precious and semi-precious stones, and metals like gold etc., so diverse in operation that stretching from simple digging-washing to using various chemicals in unprotected and dangerous manner; and diverse is the problems and challenges of the children involved in it. The area itself have a great diversity in all manners of physiography, availability of minerals, actual control of resources by various organization- from provincial and federal governments, local cooperatives to the local mining lords, separatists groups and armed juntas and militias. Due to enormity of subject matters, diversity of concerned issues, and vastness of area, it's quite natural and obvious that most studies were area specific or aspect specific. Scholars are precise and truthful in their localized and specific approach yet the lacuna of having a complete generalized information under one canopy for SSA was missing; and to answer it under a broader zonal variability was the prime targeted of the study; and in addition to this generalization-where Ethiopia stands in this discussion was other prominent objective of the study. To explore the situations of mining areas and conditions of child miners; why they are there, what are gains and losses, and sufferings and compromises, and what their ultimate futures is? were the basic questions of the study.

The availability of data and reliable information is a big limitation of this review. Very limited data is available at SSA level in similar temporal and parametric frame, and review has to carefully extract information from the available case studies of some remote isolated part of a county, or the very positive government reports.

2. MATERIAL AND METHODS

2.1. SUB SAHARAN AFRICA

Sub-Saharan Africa is a geographical, ethnographical and cultural entity which lies south of the great expansion of Sahara arid belt of African continent. According to the United Nations, it consists of all African countries and territories that are fully or partially south of the Sahara, however, United Nations geoscheme for Africa excludes Sudan from its definition of sub-Saharan Africa, and the African Union's definition includes Sudan but instead excludes Mauritania (UNSD 2017). The UN Development Program lists 46 of Africa's 54 countries as "Sub-Saharan", (UNDP 2020). The population of sub-Saharan Africa was 1.1 billion in 2019. The current growth rate is 2.3%. The UN predicts for the region a population between 2 and 2.5 billion by 2050, with a population density of 80 per km2 (UN DESA 2019)

Ethiopia, is a Sub Saharan, land locked country falls in the East African Zone- located on the Horn of Africa. Ethiopia is the largest and most populated country in the Horn of Africa. Ethiopia has a total area of 1,100,000 square kilometres (420,000 sq mi) and over 109 million inhabitants and is the 13th-most populous country in the world and the 2nd-most populous in Africa (UN DESA 2019)

So far as mining is concerned it is the richest part of the globe (excluding natural oil and gas), having some of the largest reserves of precious metals and gem stones. But due to unfortunate colonial past, widespread poverty, predominant subsistence type agriculture, continuing political instability and dominance of rebel armed forces in the mining zones of the nations, high order of corruption in politics and bureaucracy, health problems and diseases, and frequent natural and human disasters etc., restricts the countries and people to enjoy their natural richness (Kuntala L. 2003; Tetteh, K. (2011).)

To get a complete and better comparative picture of the issue the Sub Saharan Africa is divided into four conventional zones of Africa- they are the Western Africa, Central Africa, Southern Africa and Eastern Africa, all statistical details of these countries is given in Appendix Table-01.

2.2. METHODOLOGY

Present study follows the Systematic synthesis methodology (SSM) an approach of Systematic Literature Reporting, based on the published materials. It is the most prominent approach to review published scientific researches, primarily used in medical sciences but now widely used for the review of scientific researches in Natural and Social sciences (Heyn P.C., et al. 2019). The Systematic synthesis methodology is driven by the rapidly increasing number of scientific

publications in the last decades (Rapple, 2011). The prime goal to provide state-of-the-art knowledge on a topic by summarizing data from primary published studies and attempting to aggregate and reconcile the scientific results from the individual studies. (Ketcham & Crawford, 2007). A wide range of published research articles, technical papers, books, reports by leading organization, proceedings of conferences and workshops on the concerned issues, governments and international organizations reports through hard and soft copies, a variety of concerned research material from internet were downloaded and reviewed thoroughly based on the five steps of SSM.

3. RESULTS AND DISCUSSIONS

3.1. LOCATION OF MINING SITES, LABOURS MIGRATION AND CONDITION OF THE SETTLEMENTS

It's very common phenomena that the mostly the ASM sites are located in the remote area with poor access connected with seasonal muddy road. Sites are so often the area under thick forest, in arduous terrain, swamps, river bed, or rouged rocky terrain in general in somewhat tough and hostile natural settings. It is also commonly found that such areas are not falling under fertile tracts or densely populated areas. Generally, it is encountered in such areas with degraded landscape having poor economic settings with least alternatives and dominant with abject poverty. So often such areas are frequently and hard hit by natural calamities like drought, floods or by human calamities like ethnic conflicts, active armed rebels' forces, acquit control of local lords and brokers. The gold mining has been the lucrative profession a mass of rural population and immigrants for source of their incomes and livelihood (Bury 2004). Most of the mining sites are located in remote areas. Settlements are temporary with poor or no facility of sanitation, health services, supply of clean drinking water and electricity. Schools are either not available there or if so, they are located far away from the mining sites (ILO 2006). Miners are using very simple and rudimentary type of equipment and following the common traditional techniques, demanding more labour and less profit. The above-mentioned conditions are common for all zones of SSA.

In case of Ethiopia most of ASM sites were located in remote areas with absence of proper all-season roads and basic civic amenities. Most of the sites were having poor agriculture base and no other alternative economic options. These sites receive its miners from its vicinity, usually not more than 10 km, of course in some cases on north Ethiopian sites there is migrants' labours were also reported from distance places (Hilemarayam et al. 2015). In case miners coming from

surrounding villages, travelling daily- the dirty congested settlements full of dusts, pollution and several social evils are not common.

The ASM in Ethiopia could be characterized by some common characteristics as mining is mainly being done by hand using simple technology in the form of shovels, picks and wheelbarrows. The ore accessed is excavated from surficial deposits, rare case they go into shallow horizontal tunnels. There is generally neither drilling equipment nor any explosives used, and there is no earth moving machinery employed. The knowledge of the geology or deposits being mined is limited, leading to an activity with a very short planning horizon. (E-EEIT-2016). The most important products mined through AM/SSM in Ethiopia include, in decreasing relative economic importance: gold, gems (sapphire, opal), salt, tantalum and dimension stone. The production of these commodities through AM/SSM is significant, and is reported to have grown rapidly in the last few years, especially with regards to gold but also gems, specifically opal. In 2012, the production from AM/SSM was reported to be more important than large-scale operations for most metals and minerals mined, and also in terms of employment generation (World Bank-2016)

3.2. TYPE OF MINERS

Though there is a lot of dissimilarities among the child miners yet surprisingly scholars did not bother much to classify them into various categories. Most of them followed the generic classification of child labour given by ILO (1973) convention and its modifications. But discussing the problems of child labours in different part of the globe the ILO (2006) specified three situations, which actually is very useful to understand the sufferings of mining children. First when children are working with their community members or family members after school or during holidays. Second when students' dropouts and work full time. These two are common in all small and artisanal mining sites. Third forced miners- when children are trafficked to mining site, and forced to work in utterly horrendous slavery-like conditions. This is serious and of worst situation of child miners. The worst reported situations are from Western African Zone. The report mentions in Cote d'Ivoire the children trafficking from adjoining countries of Burkina Faso, Guinea and Mali was common and they were held in slavery like situations. Such situations were also found in Central and Southern Zone of SSA. The similar situation was also reported in the Democratic Republic of Congo during after the civil war which prevailed in remote pockets even after the intervention of UN peace keeping force (AI 2013). Children also work in mines in situations of debt bondage or trafficking in countries such as Zambia, Zimbabwe, Nigeria, Ghana, Liberia, Sierra Leone and the Democratic Republic of Congo (ILO 2013)

In case of Ethiopia the first two situation were common. Children were doing ASM by their own willingness, of course certain common socioeconomic drivers have their own say and they attract poor children towards mining, yet third type situation- debt bondage or child trafficking was not reported by any scholar (Woldehanna T. et al. 2008; Hilemaram et al 2015; Chala et al. 2020)

3.3.AGE GROUP OF CHILDREN INVOLVED IN CHILD LABOUR

Though the involvement of minor children in mining is more or less common in most of the SSA countries in all four zones, but the situation of Sahel countries is more critical. The west coast of Africa and along Sahara commonly known as Sahel has one of the largest concentrations of the child labour. Almost one-fourth of the total child labour of the world is concentrated in the Sahel region of Africa. Here the children up to teenage constitute almost 30 to 50% of entire miners' workforce; children start very early age and even 70% of this child miners are less than 15 years (ILO 2006). In Ghana more than 10,000 children were reported involved in mining in year 2006. Here miners engage children above 9 years old who get the minimum daily wages. Report survey published by an Aid agency, International Rescue Committee (IRC) and AVSI foundation (2006) showed that 15% of children in Northern Uganda are involved in harsh and dangerous labour such as breaking stones, collecting firewood and prostitution. Similar situation was also reported by most of the resource rich Sub Saharan countries. HRW (2015) research states that in in Burkina Faso 30-50% gold mine workers are child labour, even some work as forced labour. The situation of Central African zone especially DRC, CRC and Sudan is also critical in this context. Amnesty International (2016) report states that Child labours at large scale were also found in the cobalt and coltran mines of Democratic Republic of Congo (DRC) some of them were as young as seven years. They were working in a highly risky conditions, subjected to violence, extortion and intimidation (AI 2013).

The reason of the large-scale involvement of children in mining activities were not only their large number of readily availability but other unique reasons were also mentioned. Children are particularly useful in underground mineral deposits especially gold. As their smaller size and natural flexibility permits them to work easily in slim shafts and galleries. In Cote d'Ivoire, girls' as 5 years were sent down into narrow pits with buckets to empty out the water that seeped in during the night. Even girls do a tough job of hauling of mud to washing sites whole day (ILO 2006). In those mining activities where ore have to bring out from narrow shafts and pits the younger children are more useful. Age of workers has influence on the gold mining activities; generally, require flexibility physical strength to enter the cave type of mines by rope in some specific cases to dig gold from the high-pitched slopes and muddy areas. There was a majority of the teenagers (12-16 years old)

involved for searching and digging the gold inside of the mines under the guidance of senior gold miners who have a skill to recognize gold. Engagement of children in the mining activities was common in the study areas (Hilemarayam et al 2015). Study done in the done in the northern part of Ethiopia in Tigray region reports the tougher situation where children are working in the deep caves and tunnels to extract opal (USDL-BILA 2020). The study conducted in the south eastern of Ethiopia in west Guji zone of Oromiya region also express the involvement of younger children but the purpose was not to send them into the mining pits and shafts but for the washing of the mud (Ezo Emako 2019; Chala et al 2020)

3.4. FACTORS RESPONSIBLE FOR PUTTING CHILDREN INTO MINING ACTIVITIES

Though the hazards and processes are quite similar in all zones of SSA for ASM miners yet the factors attracting them for mining are with some similarity and dissimilarities. The common factors mentioned by most of the scholars could be generalized as condition of primary source of income and availability of alternative sources particularly during lean period of cultivation, family situations, the prevailing poverty and frequency of occasional shocks like droughts, floods etc, local tradition and alternatives available for education and employment are the direct factors determines the engagements of children in mining.

Poverty and lack of alternative source of income (other than subsistence agriculture) oe employment were to two most shot factors which are ubiquitous to all mining areas in SSA. Under conditions of unemployment and poverty, where most alternative work involves low or no pay, participation in ASM, legal or not, has become a primary means of survival for many. For many it represents work intended to meet livelihood needs, most often driven by lack of alternative sources of income (Lebonne B 2002; Hilson & Potter 2005)

Reporting the studies of Ghana Ofosu Mensah (2011) mentioned that mining is not a much localized activity but it provides opportunities to the nearby areas also. He says that the artisanal and small-scale mining activities provide an important source of livelihood for both proximate and distant communities, up to a distance of 30 to 40 km. In such communities, mining serves as both a means of survival for impoverished farmers and as an engine for small business growth (Emmanuel, A. 2012)

Okoh and Hilson (2011) have given much importance to the diversification of income in place of survival. He analysed the strong ties between subsistence agriculture and ASGM in rural Ghana, arguing that such mining represents an important means of income diversification for many

farmers, making it important to simultaneously address both agriculture and mining issues while improving people's lives. In case of Niger and Burkina Faso the frequent occurring droughts were the prime cause for children involvement in mining which earlier were largely protected due to their social customs and structure (ILO 2006). In Ghana the reported causes were large scale unemployment and decreased employment in farming.

Some specific reasons were found during review, presence in all zones but predominately in Central and Southern Zones of SSA. The case Central Zone is worth to mention. like situation created by the rebel group Lord's Resistance Army (LRA), leading the Lord's Resistance Movement, had deep impact on Central Republic of Africa, South Sudan, DRC and some adjoining areas, killed over 1600 civilians and abducted more than 2500 between September 2008 to July 2011. The *status quo* narrated by Tom Miles (2017) of the period of Congo war the LRA has abducted over 67,000 youth, including 30,000 children, for use as child soldiers, sex slaves, and porters, and has brutalized communities since its inception in 1987. During non-fighting time they were engaged in mining. After UN forces solved the problem and rebalance were surrendered, many remote mining sites were still controlled by the local militant groups, and many of these shoulders cut-off from their families and having no education or skill prefer to restore mining to survive in these sites. Another such case was similar- Child labour has been rampant in Nebbi District, especially after the Northern insurgency. The war disrupted peace in Northern region of Uganda and led to influx of people from Acholi sub-region to neighbouring, especially Packwach town council. Many parents lost their lives leaving behind a number of orphans, making many people to flee the war -torn zone for their safety. For this new crowed without anything left, with no option but to go for ASM, under the controls of local militia or war lords, even only for survival (Anumaka 2013; Christopher D 2017)

In case of Ethiopia the situation was not so complex but basic factors were same- poverty and seasonal unemployment. Family hardship and cultural values drive child labour into the small-scale gold mining communities (Hailemarayam et al 2015). The factors were more elaborately discussed by Chala et.al (2020) in the study conducted in the south east Ethiopia. Discussing the 'Push and Pull' factors it was mentioned that major 'Push' factors which were pushing out or forcing the children and adults for mining were- the traditional subsistence agriculture was not sufficient enough to meet the family requirements; no alternative source of income during the lean period; here worth to note that the coffee and *ishet* (*kocho* or false banana) are the main crop of the area and it engage the farmers in seasonal basis and for a shorter period. The 'pull' factors responsible for attracting the children and adults alike towards mining were that mining is the good source of income, the only source of additional income, a source of cash income and gives income round

the year, or especially when they are out of their cultivation work (Chala et al, 2020). Here interestingly Hilemarayam (2015) stated that the highest activity in the sites of north western Tigray region was during months of May to August, because of the more availability of waters in the seasonal rivers to wash the gold bearing sediments (dry semi-arid environment). This situation was usually just reverse for most of the other mining sites in southern Ethiopia and other tropical and equatorial countries of Sub Sahara. Because this being the massive rainy season brought by south-west winds and the main cropping season; in some cases, the accessibility is a big challenge due to bad road conditions.

The likeness for mining is another conflicting argument. Like in some of the countries of Sahel like Burkina Faso, Niger and Mali, and in DRC the forced mining activity for children were reported (ILO 2006), Nyambe & Amunkete (2009) express the poverty, unemployment and lack of any alternative job option are the prime factor in Namibia to force the children in mining activities; while the study done by Bright A. (2015) in Asutifi district of Ghana, stated that many school children ranging between 14-17 years got attracted for mining and work for earning additional income during weekends, holidays and other free times. Mensah T, et al (2017) also supports the lower productivity of farms as push factor for mining, and force to work longer hours per day. Here it is important to note that in contrary to so many other Sub Saharan countries. In Ethiopia the children's participation for mining in all three green stone belts was not reported by force rather by children's own willingness. The percentage for liking for mining among children was quite high and deviation was stable, in comparison to disliking where percentage was quite low and highly unstable in Ropi Magadda area in west Guji zone (Chala Wata et al. 2020)

3.5.MIGRATION AND CHILD TRAFFICKING

In case of ASM type mining most of the cases miners are coming from within the locality of the mining sites. In Niger and Burkina Faso majority of children are coming from local villages within 10 km from the mining site (ILO 2006). In almost all studies reported that locals in the vicinity of the mining area or the adjoining villages are the first to get involved in it and for so many it works as an alternative source of income or rather much needed cash income. It is common for all four zones of the SSA.

The worst form of migration is of forced migration. Adults and children are brought from a distant place or even illegally from neighbouring countries. These forced migrants suffer the worst type of exploitation. Its common that the single children from distance places are more vulnerable for physical and even sexual exploitation. They are the first victims of the adult miners who force

them to work full time in pits-tunnels, in tougher and dangerous jobs, work longer hours than other children whose parents are present (ILO 2019a, ILO 2019 c). As per ILO (2006) report of Niger and Burkina Faso, the girls are migrated to the mining sites with the persuasion of doing petty business but after reaching to the mining site they finally end up with prostitution.

Conflicts, vandalism and aggression are another issue for which migrants are the worst suffers. ASGM communities may experience elevated levels of aggression and violence between resident miners and newly-arrived settlers (sometimes from other regions) or foreign large-scale mining operations. Locals considers these outsiders as the unwanted shareholder in their bread and future of their children. These conflicts become more aggressive when the produce from mines start decreasing, or the large-scale immigration disturbs the earnings of the pre-existing miners on the site (Emmanuel A. 2012).

(UNEC-AMAD 2011; USDL-BILA 2020; Chala et al. 2020) in Ethiopia report this type of local workers within the vicinity of 10 km. In most of such case mining is a seasonal activity for a larger chunk of the workers, as they use the lean period of agriculture for mining activity for additional income. Mining is particularly beneficial for the local miners as it saves the money for payment for shelter and security, flooding could be easily managed with the family. With ought affecting their domestic setup and social life they get a source for extra income. Most of the cases the villages are far enough from the mining site and are safe from the polluted environment of the site. Top of all being local they are usually united and able to protect them and their family from any type of exploitation. But this type of privilege is not available for all, people are migrating from as far as 10 to 40 km from mining site. These are the poor rural workers march to the mining site in search of survival or additional income or for the betterment of their family. Hilemarayam (2015) further tells that about 80% of the small-scale gold miners were migrants who arrived from different corners of the country; Tigray, Amhara, Afar, and Addis Ababa by travelling distance from 10-700 km. It was recorded that distance and ethnicity still play role in small gold mining. In some cases the migrants are due to political unrest, ethnic conflicts, insurgency, or due to some natural calamity like drought, flood etc. This type of migrants is with limited or no option but to accept the conditions posed by the local authority, mining lords or brokers who control the mining sites, for their survival. These people frequently suffer with exploitation in terms of low to least or no wages, working for longer hours, and payments for shelter, food and security. They also suffer with theft, robbery and local conflicts.

3.6.WORKING HOURS AND REST

Most of the International Labour Organizations reports and other such reports for the Western African Zone invariably highlight the exploitation of child labours, in terms of longer working hours, very small rest and very poor wages with very shabby and unhealthy living conditions. In Sahel area both girls and boys undergo heavy works, of course girls' work on surface while boys go underground tunnels and shafts. 12-14 years child undertake full time work. Children work every day with occasional rest at weekends, working hours in Niger and Burkina Faso varies from 8 to 14 hours per day, but almost 6-8 hours daily, even reported that children occasionally sleep in underground tunnels. No doubt children have insufficient time to rest and food and water to consume, in this context the situation of single children are even worst (ILO 2006). In Cote d'Ivoire children were reported working 10 hours a day, seven days a week and were highly underpaid and were badly unnourished. Bright A. (2015) in Asutifi district of Ghana, stated that many school children ranging between 14-17 years got attracted for mining and work for 11-16 hours/day.

In Ethiopia Hailemarayam (2015) stated that the gold miners stayed 19.9±0.6 days per month. Chala et al (2020) correlated the children's working days in a week and level of absenteeism from the school. Among mining children 33.3% are working 3-5 days in a week, 52% are working 5-7 days in a week while only 17% are working 1-3 days per week. It gives a clear picture that children even though registered in school are largely engaged in mining activities. This engagement slowly increases and a regular student slowly converted into a full-time miner. Here on an average child are working in a shift of 8 hours. The senior and experienced boys are working whole day from 8-14 hours.

3.7.WAGES AND USES

This is a very crucial aspect of the entire activity, showing a great range of variation and also determines the perception whether mining is good, bad or ugly. The days of 'Gold rush' is over but the mentality is still very much alive in the mind-set of people especially those who are marketing the final produce, and it is pressing down the payments of the real worker in the mines. No doubt it is the sector which makes few people billionaire, but the same sector force thousands of children to work only for food and security.

Hilson G. (2012) explains the "Poverty Trap" faced by ASM miners and their dependents who have little resources to invest, depend on inadequate equipment that leads to low productivity and little earnings, which, in turn, exacerbates poverty and dependence on ASM. This is highly applicable for the displaced population either by the political unrest or by natural calamity. This

situation also prevails where the middle man dominates in the systems or armed groups controls the situation.

The payments are not only depending on the strength and skills but several other factors like hold of the mine lords, militias or hold of local/ regional or federal administration. In Nigeria and Burkina Faso, ILO (2006) report says that single children who choose to migrate to the site with friends, peer sponsors or even by their own, end up having to feed themselves only. Single and helpless children are exploited the most. So often the children are given food, shelter and security, but no payments. Even the cost of tools, shelter and medication is deducted from their payments in such a way that virtually they are left with nothing (ILO 2019, ILO 2019b). Children working with their parents are considered as just the extension of their parents and hardly get proper remuneration (ILO 2019a). The story of miners was almost same in the most of the west African countries from Niger and Mali to down up to Namibia (Nyambe & Amunkete, 2009) and central African countries including DRC, Uganda Tanzania and Malavi (ILO 2019a).

The situation in Ethiopia seems better largely because of the hold of local organization in the mining areas. Though it has its own negative affects yet it somehow saves the right of payments of the local miners. Though some minor and isolated incidences may not rule out but none of the scholar reported such horrifying images of the nasty activities of child exploitation from any of the three greenstone belts. Hilemarayam et al (2015) gives a somewhat different image where mining was projected as an additional source of income- as the miners have also their sources of earning from farm and non-form activities in which their family members were involved. The share of their earning was expended on food (30%), housing condition (20%) education (18%), health expenditure (15%), livestock (7%), farm implements (4%), money deposit (3.5%) and other assets (2.5%) respectively. And this income was used for the development of economic status of the family. Author further state that some of the goldminers have used their earnings for starting their own petty business and also became transport operators to earn the income by increasing demand of mini trucks, taxies and three wheelers (bajaj) for passengers and freights. Some scholars have similar positive opinion for ASM mining. Crispin and Munyindei (2003) state that the small-scale gold mining has played role to afford basic needs and to reduce rural poverty as the miners. Wherever the small-scale mining got recognition as a formal mining activity; it has contributed a significant role in improving the living condition of the rural poor. Kuntala (2003) and Hilson et al. (2013) also communicate that small-scale gold mining contributed to the sustainable development by providing employment, increasing local purchasing power, stimulating local economic growth and slowing urban migration. This could be then a source of sustainable

livelihoods for millions of marginalized people in the Northern, Western and Southern belts of Ethiopia.

3.8. IMPACT ON EDUCATION

The prime challenge for children's education is the perception or economic capacity of the rural poor. These communities rarely prefer education on regular basis to more than two thirds of their eligible school going age children. This is especially true in rural areas where child labor is widely spread. Education especially of women is considered un-affordable luxury by many hard-pressed parents. The other dimension of this problem is that in many cultures work is still considered indispensable in shaping the child's morality and strength of character and in teaching him or her trade, (Venin, 2009).

In SSA the reports on mining impact on children not widely available for all mining countries but few. The studies from the countries of Western African Zone shows a very bad situation, though some countries like Ghana did some effort in this direction yet the overall situation is quite grim. Availability of schools are the other challenge for child education. In the sites of Niger and Burkina Faso this challenge is quite pronounced as the schools are not available near the mining sites, and if they exist, they are many kilometres' away (ILO 2006, Bright A 2015)). The situation of availability of school in the vicinity and family's capacity to bear the schooling expenses are common constrains in case of Namibia (Nyambe & Amunkete, 2009). And even both the situations are fulfilled the temptation for quick cash money for children is the other hurdle (Anumaka, 2013). Students are quickly attracted to mining activities, so often to get some money for their personal use and amusements. Compromising with education seems quite easy and wise decision among the growing children (Meisanti et al. 2012; Chala et al 2020)

Tassew W. et al. (2006) established in his study that the school attendance is significantly low and dropout rate is dramatically high in rural areas where boys usually helps his father for his respective economic activity and girl to her mother. The study conducted by Ezo Emako (2019) shows improvement since last one decade yet the enrolment and dropout rate trend is similar. In the remote and isolated mining site of Ethiopia the situation of children's education in the mining sites becomes difficult. Hailemarayam (2015) recorded that there was serious dropout rate from schools and educational process. Through gold mining earning, they support their family in many ways to economic survival and to take care of school going brothers and sisters. But it was also recorded that the child labour was a widespread phenomenon whereas a number of school children who

worked in goldmines, and the trend was continued. As a result, the rural youth of the mining areas as the school dropouts has been increased.

The study conducted by Chala et al. (2020) in south eastern part of Ethiopia revels a negative impact of mining on the educational attainment on children's living in mining areas. 33.3% children working 3-5 days in a week in mining activity are absent from school for 3 days and most of time not reach the school on time. With a total 52% showing a highest pattern of engagement in mining activity for 3-5 days in place of learning in school. 17.3 % children are permanently out of learning process for 4 or more days. The effect is however more pronounced on child labours (53.3%) who are working for 3 or more than 3 days in mining activities to support their families. The Linear regression model between daily earnings and absenteeism from school as daily earnings increase by 1 unit there an increase of 0.378 units in Weekly absenteeism from school. Even the trend analysis for last 10 years shows that there is a high increase in the average annual dropout rate from the school in mining site. This dropout rate is especially very high during the years of drought. The study clearly depicts the negative correlation between the children's involvement in mining and impact on education. Ahlerupt P. et al (2016) in African context also supports these finding.

3.9. RISK AND INJURIES FOR CHILD MINERS

Risk and injuries are the common phenomena in all sites of all zones of SSA. Tougher the operations higher is the rate of risk to life and injuries. Children work both above and underground shafts and tunnels. Working in underground situation are particularly challenging. In tunnels and shafts there is always a risk of death by explosives, rock falls and tunnel collapse. Children work in an environment filled with dust and sometimes toxic gases. In so many cases the ASM go in the area of abandoned mining sights, full dangerous pits, ditches, shafts and tunnels. Such areas are very risky and accidents are very common. Upon the surface so often, children are working hours under the sun, standing in the water in a river bed digging clay and sand from river bed and carrying it as headload to the washing site. It's a very tiring bone breaking work especially for the growing children.

In Ghana most sites are still unregistered. The work in deep underground shafts of abandoned mines is common and it expose children for additional threats of flooding in caves, tunnel collapse and release of toxic fumes. Accidents causing injuries and deaths due to slips, falls and collapse are common (Basu, et al. 2015; Wilson et al. 2015)

The ASM in northern part of Ethiopia is more dangerous. The incidence of injuries and deaths due to mudslides and boulder falls of ground were common whereas 38 people dead from 2008

to 2013. Moreover, 279 small scale gold miners were injured seriously. Measures for prevention of mining accidents and fatalities are not enforced so far that aggravate the situation in the future. (Hilemarayam et al 2015).

3.10. HEALTH PROBLEMS AND DISEASES

The longer working hours and lack of adequate and nutritious food and rest, and so often no proper shelter or place to sleep is the root cause for illness among the miner children. Usually children are working 7 days in a week with ought having any holiday. Non availability of clean drinking water, polluted and filthy environment and having a very unhygienic surroundings and presence of pelleted social environment works as a catalyst for the poor health and frequent illness (Guarcello et al. 2004). As gold mining sites are in remote rural areas scattered, there was lack of basic road, health centres, potable and working water that ultimately bring health problem to the gold miners (Gajigo 2012; Stephens 2003).

Children also work and suffer as adults but their sufferings are of higher order as their body is at growing, is under development and so highly vulnerable, and impacts of noise, blasts, dim light and dusty and suffocation environment and higher exposure to chemicals may have long lasting and decisive impacts to their health (ILO 2006). The overall impacts may be reflected as hearing and sight problems, constant headache, various dermatological disease, wounds and problems related with orthopaedic ailments and top of all the seriously respiratory conditions. These situations are capable enough in jeopardizing their physical health and state of mind (ILO 2006)

The health impacts of ASGM on the land and people living in the area around Tarkwa, in the Western Region of Ghana. Malaria, upper respiratory tract diseases, especially pulmonary tuberculosis and silicosis, skin diseases, as well as injuries and accidents are associated with gold mining activities (Basu et.al 2015)

Use of harmful chemical and toxic material is also common. For instance, mercury, a highly toxic element metal, widely used for gold mining to separate out gold from the sediments and so often mishandled by the small-scale miners. It absorbed by the skin, but more dangerous is its vapour, which is in hailed during preparation of amalgamation, in so many cases it is made at home by women (ILO 2006, Tetteh K. 2011). A compilation of tasks undertaken by the miners and possible hazards and health consequences are compiled in Appendix-II.

Though no deaths were reported during the survey in Ropi Maggada area in south eastern Ethiopia yet children express their disliking in terms of mining it is a very tough work and causes frequent illness- including malaria and water borne disease (Chala et al. 2020). In case of northern mining

sites Gold miners exposed to malaria, water borne diseases and cholera as the mining sites had become breeding grounds for mosquitoes. (Hilemirayam 2015). But crucial pre and post-natal complications and mortalities recounted by Cherinet Busawa (2018) in Oddo Shakisho district of southern Oromia, raise serious question-if all is well or well because not reported? Scholar's data says women from the study area are giving birth to a child with congenital abnormalities (birth defect) and miscarriage due to cyanide contamination. Moreover, 159 babies died in their mother's womb. Around 600 livestock and 12 goats and three donkeys have died; 500 live stocks were aborted. Issue is serious and needs in-depth study.

3.11. CHILD LABOUR EXPLOITATION FOR SINGLE AND WITH FAMILY

In all major mining sites, a large number of single males and children are common. Single child (with ought family) suffers the worst form of exploitations. As nobody is there to protect their rights, to care them and assure for their security. In Nigeria and Burkina Faso ILO (2006) report says that single children who choose to migrate to the site with friends, peer sponsors or even by their own, end up having to feed themselves only.

Living with family is not a panacea for all ills, they too have some serious problems. In Sahel area so many miners are living with family and so naturally producing number of children, unattended and left to themselves while their parents are at work. In absence of any schooling or sports facilities children easily involved with mining, or other forma of notorious activities of child exploitations. And the vicious circle of miner workers inters into next generation with ought any net development or improvement of the family or individual.

Hilemarayam et al. (2015) raise another concerned social issue for single miners. They say the occupational risk, remoteness and unreliable source of earning discourage marriages for the gold miners; the facts were probed during field surveys that there were 37.42% married gold miners. Majority of them was forced bachelor who spent their times without wives at the mining sites.

3.12. PROBLEMS AND CHALLENGES FOR WOMEN AND GIRL MINERS

Women in a remote ASM have several more challenges than her counterparts, which includes practical issues such as the lack of separate changing, washing and sanitation facilities at mine sites, and affordable child care arrangements, meaning some women have to bring their children to work with them. They carries additional responsibilities often referred to as the 'triple burden' (reproductive work, productive work, and community management work) (Extractive Hub 2020)

It is observed that single girls are highly vulnerable in such mining environments. An environment full with single males, with poor or almost absence of law and order, single unprotected girl bound

to suffer all type of exploitations. The studies shows that the situation in the Western and Central Zones are more crucial. As per ILO (2006) report of Niger and Burkina Faso, the girls are migrated to the mining sites with the persuasion of doing petty business but after reaching to the mining site they finally end up with prostitution. In the mining sites of Sahel region, girls especially single migrated girls are reported as more prone to sexual assaults, teenage pregnancy and sexual transmitted diseases epically HIV/AIDS. Similar problems were also reported from Ghana where exploitation starts as early as 12 years.

In case of Ethiopia the involvement of girls and females are quite less. Social structure and physical terrain and toughness of gold mining activity restrain girl's participation in mining activities (Hilemarayam et al. 2015; Chala et al. 2020). Similar study indicates that geomorphology influences the role of women at artisanal and small-scale mine sites (Malpeli and Chirico 2013).

3.13. USE OF LIQUORS AND NARCOTICS AND ADULTERY

The zeal to earn more force them to work more. Alcohols (branded and locally brewed) and narcotics (especially marijuana and amphetamines) are among the main consumes with the belief that they make them stronger and make them fit for the tough environment of the mines. Mining sites, especially bigger ones with larger number of immigrants is a highly unorganized shabby settlement full of anarchy. These densely clustered colonies are basically accumulation of tired, frustrated single males, there is nothing much to think of future. In such environment all types notorious activities from liquor venders (branded and local brewed) to narcotic suppliers, gambling, nightclubs and prostitution flourish. There is a dichotomy for the clustering of all such unsocial activities, first argues they are there because there is a demand for them or they are in great need for the tired and lonely workers; but socialist approach blame to the mine owners or controllers, that they maintain these things/supplies willingly so that miners could not grow beyond a miner and should remain trapped in this vicious circle.

Using alcohol by small scale gold miners has been a common tendency at on/off mining sites. Moreover, the gold miners shifted lifestyle from cooperative to isolate. The insecurity regarding sheep/goat's robbery, banditry, and road accidents; the rise of prostitution, alcoholism and the use of narcotic were recoded which continued the erosion on the social relations and solidarity. Analogous to this study, Dwomoh (2012) and Meisanti (2012) show that artesian mining alters the social and culture of the indigenous people.

4. CONCLUSION

Present review of research materials concludes that most of the ASM sites in Sub Saharan Africa (SSA) are located in remote places with arduous physical terrain and subnormal social environment, with limitation of accessibility. Child labours are common in all ASM sites in SSA. The children due to family problems, to meet their expenses or just by temptation of quick cash, start the mining which mostly end up with compromise of their education. A huge number of underage children (even up to 7 years) performing varies tough and dangerous jobs. Poverty and unemployment are the prime cause for pushing people in mining, poor agriculture base and lack of alternative option during agriculture lean period are other causes. Besides these some special conditions like natural calamity or political unrest and conflicts also put people into this tough profession. In some parts of Sahel region, DRC and South African countries forced miners and slavery was also reported. Most cases children are underpaid, even some cases they get only food and security. Earnings from mining is primarily used for domestic requirements, even for education also, but as age grows a good share of this income goes for amusement and leisurely activities. Children are working for longer hours and so often do not get adequate food and rest. Education is the worst affected segment of the child miners, first absenteeism in the class increase which later on ends with dropout; making their future bleak and confined to mining only. Mining is a hazardous job full of risks, causing serious injuries, casualties and even deaths. The polluted environment and toxic environment specially working in underground tunnels and shafts under dim light, poor ventilation and noise, causes several illness and disease to growing children. Single children are the worst effected and exploited, such boys are exploited for longer working hours, least rest poorly paid or even no payment and physical and mental harassment. In case of single girls besides physical and mental they are also frequently subjected to sexual exploitation. Children with family are in better situation. Habit of smoking, liquor and narcotics consumption becomes, and children easily got trapped with bad social practices like gambling and adultery, and frequently exploited by the thief, goons, brokers and local militia.

No doubt Ethiopian situation is different and better than other SSA countries but they are also having common problems. Here force child miners were not reported, and even children express their willingness for mining. Though payments were not a complement yet compromise with education is one of the serious challenges for mining children in Ethiopia. The striking impact is on their education, dropout rate and absenteeism is high, and substantial number of children have a willingness to continue for mining than continuing their school. Here the children also get indulged with bad habit of smoking, drinking and adultery.

Though ASM in SSA has a huge contribution in countries economy and supporting huge population, and have a huge potential for the wellbeing and development of remotely located poor

downtrodden mass, but mostly being unorganized, unregistered and largely controlled by local mining lords, the child miners suffer huge exploitation, compromise with their education and future, and caught by the vicious trap of poverty.

5. RECOMMENDATIONS

Based on this review study following recommendations are forwarded for the betterment of the children engaged in various mining activities in Sub Saharan Africa:

- Though its useful for all zones yet being worst affected -Western and Central zone countries of SSA needs mass scale drive to bring the children out of the trap of ASM. Which could be achieved by integrated approach by three stakeholders a) UN/INGOs for planning and funding of drive- b). Respective federal and local governments, for the formation and implementation of strict laws against child labour and c). The network of NGOs for ground work of education/skill development/empowerment/training for the child labours.
- All artisanal and small scale mining site must be registered by the government authority and should be regulated through the Federal laws.
- Workers should be registered and government should fix the wages of a worker, and maximum working hours as per the ILO.
- School facilities must be arranged for the children in the mining sites. Schools should run as per the suitable timings of the children, preferably in the evening schools, dropout students' needs to continue their education through bridge courses.
- Alternative source of income should be developed in and around the mining sites so that the dependency on mines should be controlled.
- International organizations and NGO should launch a widespread program for the betterment of women and protection of girls in the mining sites by rehabilitate them to education or skill development organization.
- The ILO resolution 1973, with its modifications should be implemented strictly for the age of children at all mining sites.

Recommendations for Ethiopia

Though most of the recommendations for SSA are applicable for Ethiopia also but being unique situation- like self-willingness (no forced or bounded labours) of children for mining, no extreme situation of political unrest or control of rebel militia or war lords or mafias; the

situation here largely looms around two factors- poverty and lack of alternative source of income, which becomes extreme at the time of natural calamity like drought, flood etc. The specific recommendations for Ethiopia would be:

- Federal Government should opt policy- 'No child labour' and start it with abolition of child labour in all mining activities including - Artisanal and small scale mining. And with the funds of International organisations (UN/ INGOs etc.) an alternation plan of action is needed in all three 'Green stone belts' of Ethiopia.
- The ILO resolution 1973, with its modifications, and Ethiopian government (2012) young workers directives should be implemented strictly.
- The State Governments and International NGO should launch largescale agriculture development plans which should be implemented around the mining areas so that food security could be achieved in these areas, and mining should not be the only option for feeding of family.
- State governments should have a contingency plan for meeting out situations like drought-flood etc. so that families should survive and children could be saved to put for mining.
- A widespread awareness program is needed to check the children's temptation for ASM as a quick and lucrative source of income, rather they have to be educated for net loss of their future by this short term gain.
- Regulation, registration and modernization of techniques are needed to implement in these ASM sites so that adult workers should get the due payments of their hard work and could survive their family without involving their children.

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7. APPENDIX

APPENDIX-I: DEFINITION OF CHILD LABOUR BY ILO AND UNICEF-

(a). The ILO Concept and Definition of Child Labour:

The ILO concept of child labour is derived from the ILO Minimum Age Convention No. 138 of 1973, which sets 15 years as the general minimum age for employment. Any work in violation of Convention No. 138 is considered illegal child labour that should be eliminated. ILO introduces a

distinction between child work, which may be acceptable, and child labour, which needs to be eliminated. In this regard, four groups of children engaged in work/labour are identified:

1. Children at work
2. Children engaged in child labour, including all economically active children 5 to 11 years of age; economically active children aged 12 to 14 years, except those doing light work only for less than 14 hours per week; and, children aged 15 to 17 years engaged in any type of hazardous work.
3. Children in hazardous work, that is, work that will likely harm the health, safety, or moral development of a child. In addition to children working mines, construction or other hazardous activities, this group includes all children below 18 years of age who work 43 hours or more per week.
4. Children in unconditional worst forms of child labour, as defined by ILO Convention No. 182. This includes children in forced or bonded labour, armed conflict, prostitution and pornography, and illicit activities.

Artesian Mining, which is classified as one of the worst forms of child labor, is so odd with children's rights that it must be eliminated as soon as possible. ILO (2005, p39) state that:

"The activity carried out in the mines is promiscuous and threatens health, safety, and Moral development of children interfering with their intellectual development by Preventing their attendance and effective participation in school".

(b). The UNICEF Concept and Definition of Child Labour:

UNICEF has expanded the ILO definition of child labour by emphasizing the importance of domestic work by children, that is, in addition to economic work. UNICEF defines child labour as follows:

1. Children 5 -11 years engaged in any economic activity, or 28 hours or more domestic work per week;
2. Children 12-14 years engaged in any economic activity (except light work for less than 14 hours per week), or 28 hours or more domestic work per week;
3. Children 15-17 years engaged in any hazardous work.

According to UNICEF (2015) ASM poses critical risks to children, including:

• Potential use of forced child labour, or loss of education when children need to contribute to the family income. This is particularly true when children are supporting widowed mothers.

• Significant health and safety risks, including increases in communicable disease.

• Increased risk of sexual exploitation and violence towards children, including forced marriage, rape

and prostitution.

• Links to armed militant groups, particularly in conflict zones, increasing the risk that children are recruited into militias.

APPENDIX-II: MINING TASKS, HAZARDS AND POTENTIAL HEALTH CONSEQUENCES

TASKS	HAZARDS	POTENTIAL HEALTH CONSEQUENCES
Digging in open pits; sieving, washing and sorting (normal)	Collapse of pit walls, stone fall and injuries	Injuries, skin diseases, rheumatic pains, nausea; exhaustion, eye injuries and infections.
Tunnelling, diving into muddy wells	Drilling equipment; explosives; confined spaces; faulty supports; stagnant air; poisonous gases; dust; darkness; dampness; radiation	Death or traumatic injury from tunnel collapse; suffocation from compressor mining; injury from explosions; silicosis and related respiratory diseases; nausea; exhaustion
Digging or hand-picking ore, slabs, rock or sand	Heavy tools; heavy loads; repetitive movements; dangerous heights; open holes; falling objects; moving vehicles; noise; dust	Joint and bone deformities; blistered hands and feet; lacerations; back injury; muscle injury; head trauma; noise-induced hearing loss; breathing difficulties; frostbite, sunstroke and other thermal stresses; dehydration; blunt force trauma, loss of digits, limbs; eye injuries and infections from shards; dust
Crushing and amalgamating; sieving, washing and sorting	Lead, mercury and other heavy metals; dust; repetitive movements; bending, squatting or kneeling	Neurological damage; genito-urinary disorders; musculoskeletal disorders; fatigue; immune deficiency

Removing waste or water from mines	Heavy loads; repetitive movements; chemical and biological hazards; dust	Musculoskeletal disorders; fatigue; infections; skin irritation and damage; respiratory issues from exposure to chemicals and dust
Transporting materials via carts or carrying	Heavy loads; large and unwieldy vehicles	Musculoskeletal disorders; fatigue; crushed by vehicles
Cooking and cleaning for adults	Physical and verbal abuse; unsafe stoves; explosive fuels	Injury from beatings; sexual abuse; burns
Selling goods and services to miners	Physical and verbal abuse	Injury from beatings; behavioural disorders, sexual abuse or harassment
Mining and quarrying in general	Remote locations; lawless atmosphere; poor sanitation; lack of protective gear; contaminated drinking water; stagnant water and mosquitoes; inadequate nutrition; degraded environmental conditions in air, water, soil, food; recruitment into sex trade; human trafficking and forced labour; gambling, drugs and alcohol. Control of local militia, rebel groups or goons.	Death by lack of medical treatment; behavioural disorders; addiction; sexually transmitted diseases; pregnancy; stunted growth; diarrhea and digestive disorders; malaria and mosquito-borne diseases

Source: Modified from OECD (2017), "Practical actions for companies to identify and address the worst forms of child labour in mineral supply chain

Appendix Table-01: The Zonation of Sab Saharan Africa based on the Countries with high ASM activity and respective statistics.

Zones	Prominent ASM	Population	Area (Km^2)	GDP per	HDI	Prominent minin	People directly engage	^Estimated Numbe	Children in ASM

	Countries			capita (PPP)		g metals /stones	d in ASM	r of Dependents	
WESTERN ZONE	Burkina Faso	15,730,977	274,200	1,900	0.331	Gold	200,000***	1,000,000^	60,000 - 100,000*
	Ghana	24,200,000	238,535	4,700		Gold	1,100,000***	4,400,000^	7428**
	Ivory Coast	20,617,068	322,463	3,900		Gold, Diamonds	100,000	600,000	NA
	Liberia	4,128,572	111,369	1,300		Gold, Diamond	100,000***	600,000^	NA
	Mali	12,666,987	1,240,000	2,200	0.359	Gold	400,000***	2.400.000^	200,000*
	Niger	17,129,076	1,267,000	1,200		Gold	450,000***	2,700,000 ^	22,000*
	Nigeria	174,507,539	923,768	5,900	0.429	Gold, zinc, kaolin	500,000***	2,500,000	NA
	Sierra Leone	6,190,280	71,740	1,600		Gold, Diamond	300,000***	NA	NA
CENTRAL	Central African Republic	4,511,488	622,984	700	0.343	Gold, Diamond Tantalum	400,000***	2,400,000^	NA
	Chad	10,329,208	1,284,000	2,300	0.328	Gold	100,000***	600,000^	NA

ZONE	Cango (DRC)	68,692,542	2,345,410	800	0.286	Diamonds, gold, coltan	200,000***	1,200,000^	200,000*
	Republic of Congo	3,700,000	342,000	800	0.533	Gold	100,000***	NA	NA
	South Sudan	31,894,000	1,886,068	4,300		Diamonds, Gold	200,000***	1,200,000^	NA
EASTERN	Ethiopia	85,237,338	1,127,127	2,200	0.363	Gold, CGS, Opal,	500,000***	3,000,000^	NA
	Kenya	39,002,772	582,650	3,500	0.519	Gold			NA
	Tanzania	44,928,923	945,087	3,200	0.466	Gold, CGS	1,500,000***	9,000,000^	30,827*
	Uganda	32,369,558	236,040	2,400	0.446	Gold, CGS	200,000***	900,000^	12,000*
SOUTHERN ZONE	Angola	18,498,000	1,246,700		0.486	Diamond	200,000***	900,000^	NA
	Madagascar	19,625,000	587,041	1,600	0.480	CGS, Gold	500,000***	2,500,000^	NA
	Malawi	14,268,711	118,480	1,200	0.400	CGS, Gold	40,000****	NA	NA
	Mozambique	21,669,278	801,590	1,300	0.322	CGS, Gold	200,000***	1,200,000^	NA
	South Africa	59,899,991	1,219,912	13,600	0.619	Gold, Palladium Diamond	30.000****	NA	NA
	Zambia	11,862,740	752,614	4,000	0.430	Copper			NA

	Zimbabwe	11,392,629	390,580	2,300	0.376	Gold, Diamond	500,000***	3,000,000^	NA

GDP per Capita (PPP) (2017 in US$)), Literacy (Male/Female 2006), HDI (Human Development Index), CGS- Coloured gem stones

Sources- Data compiled from various sources - *ILO 2016, Wikipedia-2020, **Ghana Government data, real figure expected to be very high according to Human write watch. Extractive Hub (2020). ^ Hilson, 2016^.***