

Abstract

This paper reviews socio-economic and political impacts of the extractive industry based on a global literature review. It reveals 27 different impacts (23 socio-economics and 4 political) associated with the industry. The socio-economic impacts found in literature are : income, employment, livelihood, poverty, exports, training and skills development, community development, service access, land and assets impacts, health, security, gender, safety and accidents, education and literacy, culture, child labor, impacts on tribal people and agriculture. The 4 political impacts are children rights, corruption, human rights and human trafficking.

The lack of documented impact data for several operational mines is a crucial issue highlighted in the review. Though it is a requirement for all mining companies to report data, the review reveals that this requirement is hardly adhered to. Inadequate mining monitoring is to be blamed for lack of data and documentation.

The paper concludes with the need for more research to evaluate net returns to mining which should be used to determine the level of investment that should go back to the community. The need for comprehensive monitoring and results documentation is also recognised.

Key words: Mining industry; Socio-economics; Political; Beneficial and adverse impacts

Introduction

The Wikipedia¹ defines mining industry (MI) as the process of extraction of valuable minerals or other geological materials from the earth, usually from an orebody, lode, vein, reef or placer deposit. These deposits form a mineralised package that is of economic interest to the miner. This suggests that the extractive industry consists of operations that remove metals, mineral, liquid and aggregates from the earth. By nature of the industry, the resource is non-renewable. Such examples are oil, gas, metals, industrial minerals, coal, gemstones, rocks, clay, sand, lime, rock phosphate, etc. whilst mining process refers to activities such as drilling, dredging and quarrying. The scale of extraction may range from traditional (artisanal mining) to large-scale and global, the latter practised by multi-national companies. According to the World Bank (2018), about 3.5 billion people live in countries rich in oil, gas, or minerals. But, all too often, these resources have become a source of conflict and serious and, give rise to human rights problems so serious that they can devastate vulnerable communities rather than opportunity to benefit from. Mining produces raw materials which is then processed to add value. The developed countries in view of the access to improved and efficient technology, capital and other factors are in an advantageous position to add value to materials extracted that leads to a massive increase in returns to the economy. On the other hand, developing countries because the various services are not in order as well as due to weak institutions, primarily depend on trading of raw materials extracted as the source of revenue. Mining can add substantial amount to a country's wealth. However, sudden boom in revenue created by materials can generate socio-economic problems including inflation harming other industries within the economy, corruption and bribes leading to inequality and under development. This process is known as the "resource curse". After reaching a low point in 2002, the extractive industries globally have registered a remarkable growth in the past few years. Since 2002, the prices of many mined commodities have risen to record heights. The exponential growth of China economy is seen as one important factor explaining this growth.

For many countries, the benefits from MI form a significant source of revenue to the respective economies. The income and employment generated from extraction industry is huge and shows a steady growth. The country revenue generated from natural resources in 2015 averaged at 5.69% of GDP which ranged from the highest of 46.44 % in Liberia to zero income in Ant and Barb². Out of the 200 countries sited in the above source, 167 countries have registered an income from natural resources. The natural resources included are oil, gas, coal, minerals and forestry. The number of people employed in the sector can be as much as 2% of the total workforce as in Canada. The above indicators tell us the value and the role of extraction industry in both developed and developing countries alike. Extractive industry businesses often are assumed to be interested mainly in maximizing returns for their investments, implying that less-developed countries are vulnerable to powerful corporations.

Although the mining sector generates a huge wealth to power economies of developed and developing countries alike, the sector has inherent impacts. These impacts are both positive and negative. The extent of positive and negative impacts are context-specific and vary from extractive activity, location, economic environment, type of technology, quality and level of training of its work force and quality of governance. These impacts can be influenced at any level of the value chain by the local content policies adopted in host countries. Likewise,

¹ <https://en.wikipedia.org/wiki/Mining>

² TheGlobalEconomy.com

apprehending these impacts and their dynamics are of critical importance in the design of appropriate regulations and other measures to contain the potential damage it can cause to the economy and society. However, there are obvious impacts generated by the sector that should be managed carefully in order to uncover the wealth of the sector for development.

The identification of beneficial impacts as well as adverse impacts is critical for forward planning within the industry. It helps to further multiply benefits whilst minimizing adverse impacts. It is in the above background that this paper presents and document all impacts associated with MI.

Types of impacts

The varied mining impacts can be classified in several ways as presented in the table below.

Table 1 : Classification of Mining Industry Impacts

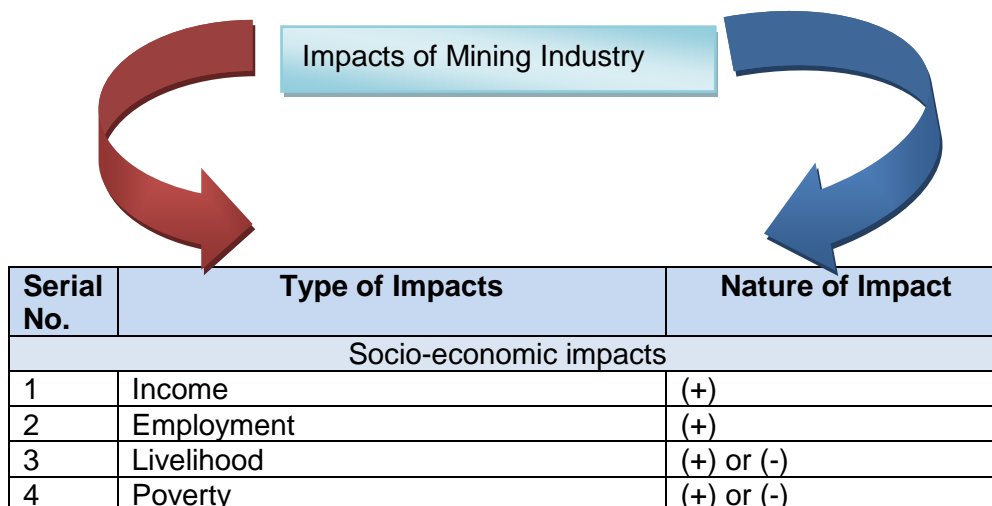
Criteria	Details
Functionality	Environment, socio-economic, political
Time Duration	Short-term, medium-term and long-term
Usefulness to Society	Beneficial, Adverse, Neutral
Place of occurrence	Extraction Site, Processing Plant, service area or Down-stream
Nature	Positive or Negative
Length of impact	Temporary or Permanent

Source: Author's construct

The above classification is not mutually exclusive. For example, impacts on the environment can be short or long-term, or can be beneficial or adverse, may occur at different locations of mining landscape and such impacts can be either positive or negative. However, the classification is useful to determine whether a given impact is beneficial or adverse or to pinpoint where the impact is seen with regard to mining landscape. The identification of location of impact is important to determine control measures.

A schematic presentation of all mining impacts as revealed in literature is shown in the Figure below.

Figure 1 : Mining Industry Impact Types



5	Exports	(+)
6	Training & skills development	(+)
7	Education & literacy	(+) or (-)
8	Community development	(+)
9	Community access to services	(+) or (-)
10	Water (scarcity and quality)	(-)
11	Land impacts	(-)
12	Assets impacts	(-)
13	HIV/AIDS/STDs	(-)
14	Security	(-)
15	Gender	(+) or (-)
16	Safety and accidents	(-)
17	Violence, drug trade and money laundering	(-)
18	Cultural pollution	(-)
19	Child labour	(-)
20	Social transformation	(-)
21	Migration	(-) or (+)
22	Impacts on indigenous and tribal people	(-)
23	Impacts on agriculture	(-)
Political Impacts		
1	Human trafficking	(-)
2	Children rights	(-)
3	Bribery and corruption	(-)
4	Human rights	(-)

Note:

(+) sign indicates beneficial (or positive) impacts and (-) sign indicates adverse (or negative) impacts

Source: Author's analyses

The above information reveals the presence of 27 different types of impacts of MI namely, 23 socio-economic and 4 political impacts. Considering the number of impacts, the socio-economic impacts surpasses the political list.

The subsequent sections present details of each impact type drawing lessons from the literature review. Under each impact type, five issues are presented namely, the nature of impact, whether it is beneficial or adverse, the scale of impacts, global occurrence, and whether each impact is short, medium or long-term, of course depending on data availability.

2 Socio-economic impacts

The 25 different socio-economic impacts are briefly discussed in this section.

2.1 Income

Income is the primary benefit of any type of extractive industry. It goes as saying that no extraction activity would have taken place unless it generates income to the proponent. The income generated from MI can be individual, companies (or organisations) or the country at large.

Individual incomes take several forms such as wages and salaries for employees, commission for contractors as well as income received by local community from sale of food and non-food items to miners. On the other hand, the extractive income received by a

company or country through trade (sale) in extracted items or providing associated services is known as revenue.

The income received by employees of mining company is highly valued and heavily beneficial to households. Individual income from mining activity can contribute to well over 90% of the entire household income. In many developing countries, the mining income is the only source of income to some households which are not endowed with other assets. The income earned by a gold miner in Kenya has been USD 140 per month (Barreto, 2018). The same study points out that both men and women believe that miners income is several times greater than the income generated by an agricultural worker. The study also found that 69% of those engaged in mining do not wish to abandon their jobs in the mine, obviously because of the high income.

It is normal that the local community receives income through selling food, beverages and other items to miners, the mining business and to visitors. The sale can be between individuals, businesses or across individual to business. The sale income is yet another important cash source for local people.

The revenue of a mining company can take two forms namely, sale of extracted items either in raw or value-added form or sale of power or other services such as gas or by-products to local people, businesses and the region. The latter is the secondary source of revenue. On the other hand, the government revenue from mining industry is substantial which forms a significant portion of country's income. Overall, the government revenue from natural resources (gas, oil, coal, mineral and forest) is equivalent to about 5.68 % of gross domestic product (GDP). It ranges from 46.44% in Liberia to a the lowest of 0.01% in Switzerland (2015)³.

According to global data (ibid), the revenue from oil as a percent of GDP range from 38.48% in Kuwait to 0.01 % in Germany (2015). On the other hand, the government income from the sale of gas ranged from 15.23 % in Turkmenistan to as low as 0.01 % in South Africa. The country-specific data from Nigeria shows that the oil revenue in total government revenue has steadily increased from about 25% in 1970 to a woefully high figure of 85% in 1985. Oil and gas together constitute over 90% of Nigerian foreign exchange earnings. The data suggests that the sale of minerals and other items forms an important source of government revenue. For the above reasons, many governments rich in natural resources continue to attract investments for exploitation of earth's resource base.

The government revenue from the industry takes a variety of forms as highlighted in the case of Tanzania (Table 2).

The government revenue from mining in Tanzania has been increasing steadily since 1998. In 2005, the revenue stood at over \$ 66 million. In tandem, overall foreign direct investment (FDI) into Tanzania between 1992 and 2005 totalled \$2.9 billion (of which \$1.4 billion was mineral related), compared to less than \$2 million between 1986 and 1991. The years 1999 and 2000 experienced the highest levels of FDI inflows, primarily in connection with the proliferation of mineral prospecting activities in the country. This investment works out to be 67% of FDI contribution that came from minerals in 1999. The rate for 2000 is still high at 69% of the FDI inflow generated from minerals.

Table 2 : Government Revenue from Mining Industry in Tanzania

³ https://www.theglobaleconomy.com/rankings/Natural_resources_income/

Category	Rate (Percent)
PAYE	7-20
Payroll Levy	1 – 4
PAYE Gratuity	1 – 7
Withholding Tax	5 – 29
Skills dev Levy	2 – 6
National Social Security Fund	4 – 11
PAYE (local)	7 – 25
Stamp Duty	1
Donations	1 – 2
Road tall	1 – 4
Mining Lease	1 – 3
Royalty	22 – 38
Import Duty	2-9
Others	1-8
% of total govt revenue	2-4

Source: Kweka (2009)

The above data reveals 12 different forms of government revenue. The royalty income received by the government is the single most important component of which the range is between 22-38% of total government revenue.

2.2 Employment

An increase of employment is one of the important benefits of MI. The industry requires various types of workers such as unskilled, semi-skilled and professionals to conduct a range of activities. Many unskilled and some semi-skilled workers are drawn from the local labour force which is a primary benefit to the community. The skilled workers may come from other parts of the country or some may come even from overseas, the latter in particular from overseas. It is difficult to say the proportion of different types of workers engaged by type of mining as it varies with the type of extraction, stage of extraction and type of processing. A study that compares employment rates in three African countries has established the following employment figures:

Table 3 : Employment Benefits of Extractive Industry

Country	Direct Employment	Spin-off Employment	Total Population Involved
Kenya	>140,000 miners	Multiplier of 3.8	Insufficient data
Rwanda	65,000- miners	190,000 jobs	1.1 Million (13% of RP 8.3 Million)
Uganda	300,000 miners	750,000 jobs	4.9 Million (15% of RP 32.7)

Source: East Africa Research Fund (January, 2018)

The above data reveals that the total number of employments generated from MI ranges from 250,000 to as much as 1 million. The employment provided by mining industry does not

confine to mining activity only. There are probably more employment opportunities created in various down-stream services such as value-added industry, transport, packing and packaging, postage and courier, communication, workshop, freight, insurance, security, etc.

Total employments from mining in Tanzania jumped from 605 employees in 1998 to as many as 5,320 in 2005. The correlation coefficient between output from gold mines and employment was 0.79. Apart from the direct employment benefits, mining creates employment more indirectly in the local community through infrastructure investments, in particular in the water, health and roads sectors. For example, Placer Dome, which owns Afrika Mashariki Gold Mines, has invested in improving rural infrastructure around the mining communities, including health (\$400,000), education (\$550,000), water (\$100,000), and roads (\$600,000).

2.3 Livelihood

The land, eco-system, forest area and various other habitats are important sources of livelihood for tens and thousands of people around the world. The fact that MI eats up on land and compromises on the sustained management of several other resource types including water, the industry is likely to risk livelihoods of people. There is so much evidence on the loss of livelihood exacerbated by the spread of mining. The impacts are both positive and negative.

It has been estimated that small-scale mining provides a livelihood for approximately 13 million workers and their families worldwide, particularly in countries such as Bolivia, Brazil, Burkina Faso, China, Colombia, the Democratic Republic of the Congo, Ghana, Ecuador, India, Indonesia, Madagascar, Tanzania, and Thailand (Remy et. al 2002). The same study suggests that large-scale mining provides direct employment and economic self-sufficiency for some 2–3 million workers and their families worldwide. In addition, for every job created directly by large mines, between 2 and 25 jobs are created with suppliers, vendors, and contractors to the mine and to miners and their families, typically provided in the context of small and microenterprise activity.

The negative livelihood impacts caused by mining's influence are on food and water scarcity, increased cost of living mainly due to competition, lack of other income sources and unhealthy living environment. Adjei (2007) reports that the taking over of farmlands in Ghana mine operations has impacted the reduction on farming activity itself and lower food production affecting livelihoods in two-fronts. The reduced food production is also coming from the increase in land degradation where crop productivity has declined due to loss of soil fertility or dumping of tailings on previously cultivable land. There is also evidence that mining has contributed to increased cost of living of communities living near the mine sites (AbuYeboh, 2008). Most basic needs such as food, accommodation, water and other necessities are expensive to purchase by ordinary people. Literature suggests two main reasons for this situation. Firstly, the mining companies employ most of the strong and able-bodied young men into the mining industry, taking them away from the farms. Secondly, most of the farmlands in those communities are taken over by the mining companies. The result is that there is always a reduction in food production in those areas and the need for food to be brought from distant areas at exorbitant prices.

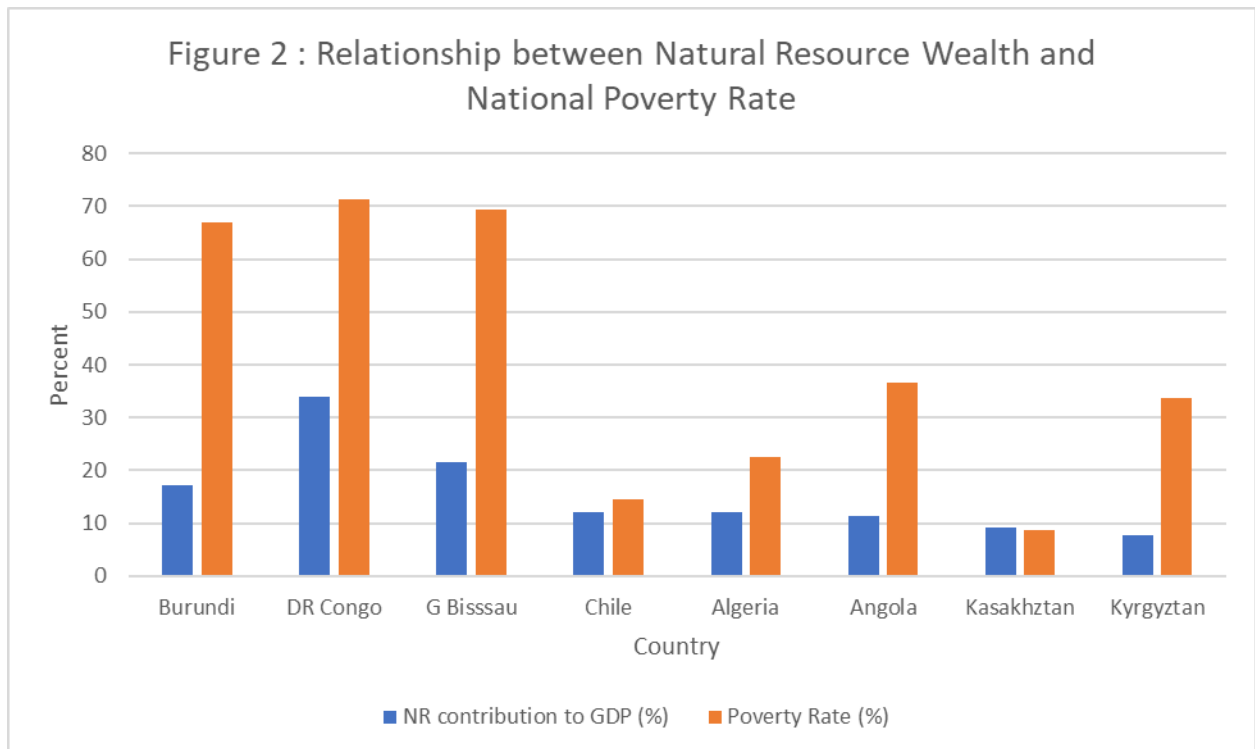
Some companies plan for the upliftment of livelihood together with the expansion of mining activity. However, livelihood improvement, is simply not a priority for transnational companies engaged in extractive industry, their national host governments or Western consumers who remain 'blissfully unaware' of local conditions, needs and priorities. The tendency for powerful companies to externalize costs and maximize profit margins is, of course, not a new realization.

2.4 Poverty

It is commonly believed that there is an inverse relationship between poverty and income from the mining industry. This may be explained as follows: when income generated from the extraction industry increases, it enriches government balance sheet, placing it in a better position to invest in poverty reduction. This is however, true only in theory. Data⁴ from some of the resource-rich (and high Natural Resource income) countries reveal that their poverty levels are very high in spite of high-revenue from resources; in fact, poverty rate in resource-rich countries is much higher than others with low-income from natural resources. This is clearly evident in Figure 2 in that world's highest poverty levels are reported in Democratic Republic of Congo, Guinea Bissau and Burundi whose GDP contribution from natural resources (mainly extraction) is well over 20%. On the other hand, countries with below 10% GDP contribution from extractive industry (Chile, Angola, Algeria, Kyrgyzstan, Kazakhstan) have half of the poverty level of resource-rich countries. This is in fact a huge concern as country's revenue from its natural resource base is not utilized for the improvement of living standards of its inhabitants. As discussed later in this paper, there are issues such as high rate of corruption that siphon off resource income, that explains higher income is associated with higher poverty rate too.

Another way poverty is impacted results from mines closure which creates an upsurge in local unemployment and income losses, which result in a myriad of livelihood problems including a resurgence of poverty levels. In the late 1990s in Namibia, some foreign mining investors closed their operations and withdrew without notice, leaving the government and the local communities unprepared for the mine closure. In addition to the loss of employment and income, sudden mine closure can deprive the local population of the most basic social services and access to public goods, such as clean water, energy, or transport, provided previously by the mining company. Lack of these services and goods affected vulnerable groups more drastically than others.

⁴ https://www.theglobaleconomy.com/rankings/Natural_resources_income/



Source: Author's analysis based on global economy data on GDP and World Bank poverty data (2015)

2.5 Exports

The mining sector of most countries' is export-oriented. This follows the purpose of mining which is primarily to produce commodities such as oil, gas, coal, minerals, etc. for external trade. For a number of developing countries export of a single commodity accounts for a large share of its total exports as shown below:

- In Chile, the share of copper exports in the total export of goods rose from an average of 38% in 1991-2003 to 61% in 2006 (McMahon, 2014);
- Gold exports in Ghana rose threefold from 1990 to 2004 increasing its share in the total exports of country from a quarter to 37% (ibid);
- Exports of copper and cobalt in Zambia were \$3.2 Billion in 2006, about four-fifths of country's total exports (Barreto, 2018);
- In the Republic of Tanzania, from zero exports prior to 1990, gold exports rose to \$ 640 Million by 2005. This accounts for 43% of total export of the country (Kweka, 2014);
- Exports of metallic minerals in Peru accounted for 62% of total exports in 2006 (Bebbington, 2009).

The main message is that the contribution of mining towards country's export earnings is substantial.

2.6 Training and skills

The mining industry requires skills of various types to operate a range of activities from extraction to processing and down-stream value-addition. Although many of the skilled people are sourced from outside the mining area, such people require skills development to suit the actual requirements of a particular industry. Of course, the workers recruited locally need to upskill in areas where the company has a demand for. As the employment of a

skilled labor force is *sine quo non* for the successful operation of any mining activity, companies consider skills improvement and continued training of its staff an important activity. Almost all extractive industries invest on training and skills development of the workforce. In 1999, Minera Escondida in Chile established a training centre that helps improve occupational skills required in various mining operations. In Botswana, Debswana—a joint venture between the government and De Beers have established an intensive training and apprenticeship program. It also offers both local and foreign scholarships for its employees for further training. For some developing countries such as China, engineers trained in sophisticated technologies by the extractive industries is particularly valuable as it eliminates the need to hire expatriate engineers to do the job. The workers benefit from their improved skills not only for the work at hand but also in the context of similar jobs elsewhere. There is evidence that workers who have acquired skills from an employer have made use of such skills for gainful employment elsewhere. For local people, their skills development is a huge success story that they highly benefit from. This goes as saying that if not due to the industry, the local work force remains unemployed. Hence, the extractive industries have a significant impact on human resource development of the host country.

The issue is that evidence with hard-data on skills improvement and training provided by extractive companies are largely not available. More so are the number of local workers who have benefitted by way of employment in other companies or even in other trades as a result of investment on training when they were company employees. Another area where evidence is not reported is skills development and training received by women and evidence on how the women work force has benefited from their improved skills set as well as other social ramifications that this improvements have led to.

In the absence of evidence, summarised below are some salient issues with regard to training and skills development by road construction companies in PNG (Department of Works, PNG, 2017).

- About 2 % of local people in the work force has received training on such trades as welding, tile laying, mechanics, carpentry and plumbing;
- The company provided written recommendation to trained local workers in their attempts to seek employment elsewhere;
- A small number of trained workers have been employed in skilled jobs elsewhere after the closure of construction activities;
- Training in skilled jobs is praised by local workers;
- Men workers have been the primary recipients of all skilled training. This outcome is a result of both local customs as well as lack of awareness of potential women applicants on such opportunities.

2.7 Education and literacy

This is yet another area where reported evidence associated with MI is lacking. There are companies that invest on literacy development and education of the local community. More so is investment in the local community is often a requirement for the company as stated in the mining agreement with the host country. The education and literacy benefits to the community are huge and is vastly praised by the local people especially women. More work is needed in this area as the level of education and literacy among the local people in developing countries is low. The adult literacy in Afghanistan is just 31% (NRVS, 2014). Although literacy rates in mining areas of Tanzania have recorded an improvement from an estimated 67% in 1999 to 84% in 2005, much remains to be done (United Republic of Tanzania, 2005). Much of the evidence in this area has escaped from being documented which could either be due to low level of achievement, weak mining monitoring or both.

2.8 Community development

Besides the financing of a wide range of government activities, the mining industries help improve community development through supporting a host of infrastructure works such as roads, ports, power and gas supply, urban and rural development, schools, hospitals, etc. Such investments are widely driven by the corporate social responsibility (CSR) agreements between the mining company and the government. The need for companies to invest on community development more often than not, are requirement stated in the law. Maconachie et. al (2013) argues that community development initiatives trigger the potential for disastrous disconnects to transpire where actual development needs as reflected in the minds of local people are so different from what is implemented by mining companies. Such outcome has resulted in further fragmentation and inequality of the community. On the other hand, a World Bank study has provided evidence that among five countries studied, mining companies have contributed significantly to regional or national infrastructure in just Chile and Peru (McMahon and Moreira, 2014). Evidence suggests that several towns in Botswana (Selebi-Phikwe, Orapa, Jwaneng, Letlhakane, Sowa) owe their existence exclusively or mainly to nearby mining activities. These towns account for around 10% of Botswana's urban population. Wages paid to mining employees, and purchases by mining companies, provide the basis for secondary economic activities in these locations. The mining sector has also provided the impetus for the development of water and power supplies, and of road and rail infrastructure.

The major mining companies (BCL and, especially, Debswana) have invested extensively in health and education facilities in their communities. Companies operate hospitals which are open to both company employees as well as the general public. Debswana has been active in responding to HIV/AIDS, and was the first company to provide anti-retroviral therapy (ART) to employees and family members, free of charge. Debswana's hospitals at Jwaneng and Orapa now have specialized Infections Diseases Care Centres, which provide ART and related treatment in partnership with the Government of Botswana to local communities. Other social initiatives undertaken by Debswana include the provision of significant urban infrastructure, such as airstrips, roads, housing and water supplies; the funding and management of primary and pre-primary schools; the establishment and management of game parks; the establishment of the Harry Oppenheimer Okavango Research Centre in partnership with the University of Botswana for the study and conservation of the wetland ecosystem in the Okavango Delta; the funding of a venture capital fund (Peo) that provides finance for the development of business projects owned by small and medium size entrepreneurs; a donations fund providing over \$1 million a year to deserving causes and organizations.

There are other indirect benefits from the infrastructure built by mining company. In the Republic of Tanzania, the investment on airports, hotels, roads and other services in the Lake Victoria Gold fields have improved tourism in the northern part of the country.

The investment by mining transnational companies in Tanzania on community facilities such as education, health, micro finance, water, roads, electricity, youth activities and HIV control is huge. The total investment funds in above sectors have grown from \$ 4.15 Million in 1998 to as much as \$ 35.79 Million in 2005 (Kweka, 2009).

It is also to be noted that many companies have not contributed to local infrastructure development works in contrary to agreements which is a burning issue for both the local population as well as the government.

Mining closure also results in low maintenance levels of infrastructure whose upkeep becomes burdensome for local authorities.

2.9 Service access

The development of MI if accompanied by an investment boom in infrastructure, is likely to improve access to public services. The previous paragraph has given several instances where the expansion of MI has resulted in the development of infrastructure services both locally and regionally. The building of infrastructure itself will not warrant safe and improved access to such services especially by women and other vulnerable groups in the host country. However, there is less evidence whether the improvement in infrastructure has in fact enhanced people's access to such services.

The low-access to services can be due to several reasons. First, the improved infrastructure is built primarily for the workers in mines where local people may not have ready access to such services. Second, although services have expanded, the influx of men workers may restrict the movement of women and girls in the community (particularly in countries with less freedom for women and girls), thus they cannot benefit from improved services. Third, the services such as clinics, playgrounds and markets may be built near the mine which normally are away from the centre of the village, making such services are less accessible to residents. More studies and data are needed to demonstrate the relationship between the expansion of EI and the improvement of service delivery.

2.10 Water

Globally, 2.1 billion (1.2 billion in developing countries) people lack safe drinking water at home (WHO, 2017). Almost 2 in 3 people lack access to clean water. Impact on water resources is a common and almost possible impact of MI. The water impacts are in volume (quantity), quality and distribution. The scale of water consumption in extractive industry operations can be substantial which depends on the type and scale of mining operation. Water is drawn from existing sources such as reservoirs, rivers and streams or by drilling to exploit ground water aquifers. In both cases, a mining operation uses a large volume of water that sucks up most of the existing sources including underground aquifer. The over-use of ground water can create loss of water in wells used by communities around the mine. The excessive use of water creates a deficit of this important commodity thus compromising water consumption by local people, animals, agriculture and other rural industries. Hence, the demand for water by mining company creates a scarcity of water.

The mining industry influences water quality physically, chemically and biologically. The heavy sediment loads resulting from riverine mining operations or discharge of sediment-laden water back into streams and rivers cause water to pollute. This is a typical problem in Papua New Guinea where water in most of perennial rivers is turbulent almost throughout the year. This is a significant nuisance to down-stream users especially women. The accumulation of tailings and the slow-release of various chemicals such as metals, sulphide, minerals, dissolved solids and salts into water bodies creates chemically polluted water. The discharge of mercury into rivers, streams and estuaries is a critical problem reported in many countries engaged in MI, for instance in PNG's Porgera Mines. Chemically polluted water can negatively affect surface water quality, aquatic ecosystems, and groundwater quality. Impacts on aquatic life can include increased mortality, health or reproductive problems, and a reduction in the number of species present (Mining Facts, 2012). Moreover, the presence of large numbers of mining staff causes water contamination with faecal material thus affecting the biological quality of water.

The impact of water is long-term where cleaning of polluted rivers is a long-neglected activity by mining companies. The dumping of tailing by OK TEDY mine in PNG is a case in point where thousands of hectares of the Fly River has been the dumping ground which has never been attempted to clean.

2.11 Land impacts

The extraction industry creates land impacts in a variety of ways. These include the expansion of excavation and exploitation sites, to build access roads, pipelines, work camps to create stockpile area and processing plants and, dumping of excavated materials, waste including tailings, redundant machinery, used machinery parts including tyres and equipment. The impacts are both in quantity of land available as well as in the quality of existing land and the question whether such land is able to continue food production after being contaminated by mining waste including chemicals.

The land taken by the mining industry creates a greater competition for the remaining and unmined land for production of food, fuel, grazing and other consumable items. Increased competition for land is a huge issue in areas with higher productivity where the local people use it for their living / production. Taking away of such land by the MI causes unforeseen impacts on the local people including lack of food, fuel and pasture. Still in other cases, tailings are dumped on riverine and other sensitive eco-systems where the land is held by the state or tribal communities.

On the other hand, the mining company taking away of unproductive or unusable land in return of compensation is an issue praised by the local community. However, such compensation has always not been adequate and local people have suffered from the land taken by the mining company. The non-payment of full compensation for land taken by the Porgera mine and Kutubu Gas fields in PNG are long standing issues. It is to be noted that there is a lack of reported evidence on land impacts caused by MI.

2.12 Assets impacts

Assets fixed to land are impacted causing severe hardships to local community. Such assets include houses, sheds, irrigation structures, animal cages, trees, crops, drinking wells, businesses, etc. that provide income, generate food or provide livelihood support. The law of many countries requires that company pays compensation for the relocation of assets that are fixed to the land. However, companies pay little attention to compensation payment causing negative impact on people's livelihood activities.

Literature on both assets impacted by mining as well as the impact of local people from the loss of livelihood are scare.

Another issue relates to compensation is that funds received are improperly used by the affected people. This is due to a number of reasons such as ignorance, lack of orientation of people, absence of training and skills development and the absence of opportunities for investment of compensation funds. People have been engaged in farming for generations and it takes a lot of work to change their skills to re-orientate people to do work away from farming. Given below are some cases that vividly show the plight of people affected by resettlement even after payment of compensation (PNG Ports, 2014):

- Difficulty to purchase assets of the same quality;
- Tendency for the use of compensation money to purchase white-ware goods, motor vehicles and other items that do not directly contribute to income generation or livelihoods;
- Funds are used in consumption or welfare as the affected people are not provided with adequate life skills training. In particular, rural people have no prior experience in handling large sums of money when the tendency is to use in consumption;

- Compensation funds are robbed or lost;
- Funds are invested where new investment collapsed due to lack of experience in management.

As a result of one or several of above factors, the post-resettlement living standards of the affected people tend to be lower compared to pre-settlement phase. For instance, the PNG project has deteriorated quality of livelihood of xxx% impacted people compared to pre-resettlement. This is a huge issue that many governments do not wish to admit.

2.13 Health, HIV/AIDS, STDs and other diseases

Historically mining was among the deadliest of occupations owing to 'brown lung disease', fatal explosions and mine collapses. A large-scale study found that underground gold miners in Australia, North America, South America and Africa suffered from 'decreased life expectancy; increased frequency of cancer of the trachea, bronchus, lung, stomach, and liver, increased frequency of pulmonary tuberculosis (PTB), silicosis, and pleural diseases, increased frequency of insect-borne diseases, such as malaria and dengue fever, noise-induced hearing loss, increased prevalence of certain bacterial and viral diseases and, diseases of the blood, skin, and musculoskeletal system' (Eisler 2003). Underground explosions of methane and other gases trap and kill thousands of miners every year. Owing to poor ventilation in underground shafts, miners are exposed to harmful gases, dust, toxins and heat, leading to silicosis.

The literature provides a rich list of diseases associated with MI as listed below.

Lung disorders

- Occupational lung diseases
- Chronic obstructive pulmonary disease
- Dust diseases of the lungs
- Coal-workers pneumoconiosis
- Asbestosis
- Silicosis
- Byssinosis
- Asthma
- Respiratory conditions caused by toxic agents

Repetitive motion

- Carpal tunnel syndrome
- Tendonitis
- Disorders associated with repeated trauma

Other

- Neurotoxic disorders
- Noise-induced hearing loss
- Dermatologic conditions
- Psychological disorders
- Severe occupational traumatic injuries
- Reproduction disorders
- Poisoning
- Disorders caused by physical agents other than toxic agents
- Malignant pleural neoplasm
- Occupational cardiovascular diseases
- Lead toxicity

- Pesticide and insecticide toxicity
- Hepatitis B
- Hepatitis C
- HIV/AIDS

Source: Scott and Grayson

In 1993, out of every 100,000 gold miners in South Africa, 113 died in accidents, 2,000 suffered a reportable injury, 1,100 developed active tuberculosis and of these 25 died; in 1990 about 500 were identified as having silicosis other lung diseases, heat stroke and cancer. Large numbers of miners sharing limited underground air create conditions for tuberculosis and other respiratory diseases (Ogola et al. 2002). Coal mining is considered an occupation that causes extremely high mortality. Uranium miners face elevated levels of lung cancer, silicosis and, together with the surrounding population, are exposed to radiation, causing birth defects, immune impairment and cancer. Poorly maintained mines in the former Soviet bloc are among the most dangerous in the world, with hundreds killed in recent years owing to explosions and collapses (Birn et al. 2009). Despite increasing mechanization and other methods to rectify issues, the problem continues. Loud noise, a ubiquitous hazard across all sectors of the mining industry, can result in significant hearing loss and hypertension (Driscoll 2007; Donoghue 2004). Exposure to vibration due to vehicles and power tools is a risk factor for musculoskeletal conditions, especially lower back and neck injuries (Driscoll 2007). Heat exhaustion can be caused by thermal stress related to surface mines with hot ambient temperatures as well as underground mines with high humidity, geothermal gradients in deep mines and liberation of heat by mining machinery and equipment (Driscoll 2007; Donoghue et al. 2000). Toxic metals such as mercury are commonly used by miners to amalgamate gold and other precious metals, often with bare hands, leading to occupational exposures as well as environmental exposures once the metals are discarded as waste. A number of studies have found very high levels of mercury in edible fish stocks near mines, which pose particular risks to children (Eisler 2003). Radioactive ores increase the risk of certain cancers (Driscoll 2007).

Mining communities are sometimes associated with a high risk of exposure to HIV/AIDS. This is particularly the case when miners are migrant labourers, living temporarily in mining locations while their families are elsewhere. Although this pattern characterized many mining settlements in South Africa, it does not apply in Botswana, where permanent settlements have been established around most mining operations, where miners live with their families. Nevertheless, Botswana's mining towns are associated with migration, mainly because they offer more economic opportunities than surrounding rural areas, and there is some evidence that rates of HIV infection are relatively high in mining areas. Adult HIV prevalence rates in the three health districts which include significant mining settlements are shown in table 5. Two of the mining areas have HIV prevalence rates higher than the national average, and indeed Selebi-Phikwe has the highest rate in the country.

Table 5: HIV Prevalence Rates in Botswana, 2005

Health District	HIV Prevalence Rate (%)
Selebi-Phikwe	46.5
Boteti (Orapa, Letlhakane)	35.4
Jwaneng	30.3
Botswana	33.4

Source: Jefferis, 2009

The township or market segments that emerge from (or surround) the mining areas have often been identified with high HIV/AIDS prevalence. Several factors are attributable to this

trend where most commonly mentioned from the literature are lack of awareness, a carefree attitude, widespread prostitution, and lack of access to quality health services (Kulindwa et al., 2003). The study by George (2003) in Geita mining operations also found similar problems that fuel the spread of HIV/ AIDS. The problem of HIV/AIDS cuts across all sectors in the Tanzanian society and is not particularly tagged to the mining activities; however, such activities often provide an environment conducive to the wider-spread of the pandemic.

2.14 Security

The relationship of extractive industry and security are twofold (Weber-Fahr et al, 2014). First, the higher income obtained through mineral income can contribute to breeding of local thugs who may pose against the security of innocent local people. This issue has a high relevance in the context of Afghanistan which will be discussed in Section three of the report. Second, some people may want to use the mineral wealth to finance political or military conflicts. "Conflict diamonds" are a prime example. They have helped to fuel civil wars in countries such as Sierra Leone and the Democratic Republic of the Congo and are used to finance ongoing military conflicts in countries such as Angola. Political stability, democracy, transparent revenue management processes, and a transparent legal regime for mineral rights and for appropriate revenue sharing can help avert such conflicts.

There is yet another security issue raised in literature. It is the security of mining operation itself or what is known as protection of their private business. Insecurity and conflicts evolve around the highly contested question of who has legitimate access to resources, who shall have access to land or who will finance to fix damages caused by the company. Local community groups may demand the redistribution of company profits to them as a social security for the loss of their land or other assets (Börzel, 2011).

2.15 Gender

The impact of resource extraction is typically greater for women and girls than men. Whereas women traditionally occupy an integral position in indigenous communities, resource extraction tends to promote men's dominance. Companies, almost exclusively recruit men as workers, tend to negotiate with local men and ignore women completely. The few jobs available through mining are given to men only, and the influx of mining labour tends to comprise men without families. Mining communities therefore tend to be excessively patriarchal.

In PNG road construction projects, women workers comprise only a mere 2-4% of the entire work force (Department of Works, 2017). Repeated requests by the project owner to the contractor pushed the women employment rate slightly high yet not commensurate with needs of local women. Overall, there is a predominance preference for men engagement compared to women in the industry. A wider educational and awareness strategy is needed to attract women into construction jobs including MI in PNG.

A study on salt mining in Uganda has shown that women are mostly disadvantaged in mining activity (Hinten, J J, 2011). A World Bank study (2009) in four countries (Peru, Poland, Tanzania and PNG) reveals a striking feature in the structure of the community affected by mining. Men have most access to the benefits such as employment and income whilst women and children who provide much support to the men are not benefitted. In addition, the women and children are vulnerable to harmful social and environment impacts of mining. Men and women have different priorities with regard to the spending of mining income. Typically, men spend mostly on alcohol, gambling and smoke whilst women's priorities are on food, health and education of children. Hence, changes in income brought

about by mining can significantly impact on household food, nutrition and education. The study also points out that women have unique role in ASM which can create health and safety risks on them.

EI's impacts on men and women are different as summarised in the Table 6.

Table 6 : Gender Impacts of Extractive Industry

Criteria	Effects	Impacts
More men compared to women employed by EI	Less cash in women hands leading to low family nutrition, low investment on child care, less investment on children schooling and not able to take credit and to repay loans taken already	Increased poverty and families become endangered
Discrimination in hiring practices	Implications for EI companies such as overlooking productive, efficient and high-performing labour of women. Implications for women are barriers to private sector development, entrepreneurship and thereby economic growth	Frustration among women, increased women poverty and reduced company revenue
Safety at work	Women respect work place safety and environmental safeguards greater than men	Less accidents and greater public recognition of the company
Heavy machine and shovels operated by women	Low operational cost when women use it	Increasing profits from mining, enhanced life of equipment, more wages in women hands leading to enhanced living standards for women
More men retrenched due to restructure	Increased unemployment for men and low cash for HH spending	More burden on women to fuel household activities and decline in living standards
Increased hiring of women in response to gender concerns	Greater employment of women than men	Increased social disruption and conflicts in family in societies where women employment is customarily not permitted. Women are subject to harassment and high risk of their safety at home
Women work condition and pay	Generally low and unsafe. May loose job when pregnant	Impairment of women health and work life
More work or employment for women in EI	Neglect of household work usually carried out by women	More pressure on young girls for HH work, less time for girls in school, early

			drop-outs, poverty and become vulnerable for HIV/AIDS
Increased income on men	EI	Men prostitution, and greater risk of HIV/STDs transmission to their wives	Negative impacts on household nutrition, health and education
Acquisition of productive and cultivable land	of	Women have to walk further away to cultivate that takes more efforts, time and more time is spent away from home	Impacts on HH activities; risk of women exposure and low performance as more time is spent on travel
Water pollution		Effects on women are greater as their primary role is to collect and transport water	Greater time spent on water collection by women and girls, using contaminated water may lead to children sickness and diseases
Loss of wood resources	wood	Women are severely disadvantaged as this activity is mainly in their domain	Lessened household activities and reduced living standards
Air pollution		Risk of women health especially pregnant women, is higher	Increased still births; risk of damaging of corporate relationship with company

Source: Adapted from World Bank, 2009

In most cases, men employment in EI surpass that of their female counterpart. Men are unlikely to pass on their wages to women whose priority is not on education, health, children education and livelihoods. Rather, with increased access to cash, men instead frequently spend more on luxury items, including alcohol, cigarettes, second wives, prostitution, and activities such as gambling. Thus, since women are more likely to spend income on families, hiring men over women of equal skills mean that families and dependents lose out in terms of health, education, and nutrition. Where women cannot access jobs, it may put women in a position of increased dependency on husbands and male family members. The situation is often even more severe for the most vulnerable in the community, which generally includes women in female headed households, for whom EI development can cause the loss of traditional livelihoods and increased exclusion from decision-making. Another trajectory of women employment in the extractive industry is in the wages where it is much less than the wages received by their opposite counterparts. For instance the average women wages in Porgera mine has been a third of men wages (Banks, 2009).

2.16 Safety and accidents

The activities of EI can impact safety and accidents not only on its work force but also on nearby communities. Mining in general has been identified as the most hazardous industries. However, the occupational safety and health implications vary significantly between different mining activities and countries. Airborne contaminants, noise, vibrations and heat stress on

surface of mines can create long-term health problems of workers exposed to risk factors over long periods.

Historically, coal mining is considered to be prone to major safety risks related to slope failure, collapse of underground mining roof, gas explosions and unhealthy air quality. In the oil and gas industry, the frequency of accidents is lower than in many other industries. However, because of the high combustible nature of products, accidents such as fires and explosions are imminent. In July 1988, for example, 167 workers were killed when the Piper Alpha North Sea rig of Occidental Petroleum in USA exploded after a gas leak. The excavation and dumping of rocks are said to be a primary source of accidents, pollution of riverine eco-system frequent flooding and loss of fish.

The open pits after mine closure is a huge safety risk for nearby families especially children. In Uganda, the open pits have caused a number of deaths of children and women in their attempt to collect rain water that filled into open and abandoned pits.

Air pollution resulting from EI causes several health hazards to mine workers. For instance, a group of industrial respiratory diseases collectively known as pneumoconiosis is attributable to mineral dusts. Among these, the general public is at risk due to crippling asbestosis (crocidolite), white asbestos (tremolite) and a range of other fibrous silicate minerals. Only slightly less notoriety is attached to silicosis due to exposure to silica dusts, but almost all mineral dusts are potentially debilitating leading to chronic obstructive pulmonary disease -COPD- (AFGHANITE, 2018).

Accidents involving vehicular traffic and heavy equipment is a common form across all mining sites. The loss of lives of 29 people in the West Coast of New Zealand following the Pyke River mine failure is a long-debated issue that has still not resolved.

2.17 Violence

The relationship between mining industry activities and violence is positive. The expansion of extractive activities lead to more migrants and higher growth in population. This in turn increases heterogeneity of the population and thereby a break-down in informal methods of social control such as family, elders and local networks. The reasons for decline in social control can be explained through the disruption of continuity of cultural traditions and informal support systems, increasing uncertainty and perceptions of threat, and generating culture conflict, thus leading to a rise in crime and violence.

Further, rapid industrial growth stimulated by mining boom tend to economically deprive some people relative to others. Such people view as they are deprived and perceive the situation as unjust. This perception may generate hostility and stimulate aggression toward other people, resulting in violent crimes. The direction of aggression inward and may lead to suicide.

Seydlitz et al, (June 1999) analysing data obtained in Arkansas and Louisiana have shown that increased petroleum industry activity is associated with higher rates of lethal violence. The price of oil was significantly related with suicide and lethal violence rates. The same study has found that the rate of violence and suicide is significantly higher in communities that are involved in the petroleum industry compared to other communities minimally involved. This is explained by the fact that money income and work hours are greater in involved communities compared to others with minimal involvement. The higher income is associated with alcohol consumption whilst the increased work hours is associated with greater degree of human stress. Both factors lead to aggression and higher suicide.

2.18 Impact on culture

Mining often occurs in areas inhabited by rural people who have lived for generations. Many of these people are recognised as indigenous and have a traditional way of living intimately connected to their environment. With the continuing expansion of the mining industry, an increasing number of such communities are coming into contact with mining companies. Extractive industries review by WB in 2004 noted that the vast majority of human rights abuses reported to international human rights organisations by indigenous groups stem from the exploitation of natural resources on their lands.

The sudden influx of foreign workers into predominantly rural areas can be a huge social challenge for local communities such as :

- Communities perceive expatriate workers as competitors for local resources utilization, create crowding-out effects in services (housing, infrastructure, etc.) and even lead to a reconfiguration of local social structures;
- Management of land (including its utilization for waste disposal). This issue is particularly sensitive when extractive activities compete with other land uses like farming, artisanal mining, or tourism activities and also when it is inhabited by indigenous people for whom land usually represents their source of living and the core of their collective identity and spirituality;
- Economic dependency and inequalities. Local economy can highly rely on meeting mine or oil and gas exploitation needs, being vulnerable to boom and busts in commodities prices or changes in levels of activity. Regarding economic inequalities, they can be internal, between incomes and living conditions of members of a community that work in the mine and the rest, and also external, between regions receiving resource rents or royalties and those who do not.

2.19 Child labour

Despite the law against the use, many mining companies engage child labor in their operations. Rates of child labour are high across Karamoja in Uganda (an estimated 20–30% of the workforce), particularly in alluvial, subsistence ASM areas. This appears to be even more pronounced for girls than for boys.

Kulindwa et al. (2003) reported employment of child labour in mining resulting from parents forcing their children to work in mines due to high level of poverty. According to George (2003), in small and large-scale mining operations in the Geita District, 12.5% of the workforce were children. However, the same survey observed that “child labour is primarily a concern for small-scale mining operations, and very infrequently in large-scale mines” (George, 2003, p. 76). Children in this context are between the ages of 14 and 18, and their willingness and acceptance to work in the mines is due less to child labour employment and more to survival strategies arising from the lack of alternative employment or other income-earning opportunities. Children are heavily used in many mining activities in Afghanistan (AREU, 2017; IWA, 2013)

2.20 Social transformation

The ability to generate wealth through natural resource rents also serves to weaken other areas of the economy, which may be less vulnerable or valuable to rent seeking. This syndrome is known as the Dutch disease: corrupt rulers focus on their own wealth creation

through embezzling or capturing rents from point-source resource extraction and they show little interest in developing other potential sectors of the economy, including agriculture (see Hodges (2001) for a good example in Angola).

The Dutch disease not only accounts for poor economic growth outside EI but also has a profound impact on inequality and social structure. In particular, the over-reliance on resources, such as oil and gas, tends to diminish female participation in the labour market. This in turn reduces the political influence of women, which may account for the fact that major oil and mineral producing states are characterised by atypically strong patriarchal institutions.

Summing up the multiple consequences of resource dependence in developing countries, a report published by the World Rainforest Movement (2004) claimed:

“... the more that southern countries rely on exporting minerals, the worse their standard of living is likely to be. Higher levels of mineral dependence are strongly correlated with higher poverty and child malnutrition and mortality rates. They are also associated with income inequality, low spending levels on health care, low enrolment rates in primary and secondary schools, and low rates of adult literacy, as well as higher vulnerability to economic shocks. Recent academic studies reveal that overall living standards in mineral dependent states tend to suffer from high rates of corruption, authoritarian government, government ineffectiveness, military spending, and civil war. One good case in point is that although Angola is blessed with an impressive resource base, it is Africa’s second largest exporter of oil and the third largest exporter of diamonds. Unfortunately, the country has one of the highest levels of poverty in the world. In cases where the consent of the indigenous people has not been forthcoming, non-representative indigenous leaders have been created and recognized by the National Commission on Indigenous Peoples and the mining companies. The indigenous people view the selection of elders through procedures that do not respect customary laws as invalid. According to them, consent obtained in this manner should not and cannot be the basis of FPIC (Doyle 2007:28)”.

The recent opening of a large-scale mining operation in Australia is triggering significant demographic changes which result in a structural and functional transformation of the local social environment (Petrova, 2013). Two new phenomena, namely transiency and a dependency culture are identified. Maintaining existing levels of social and economic capital as well as mobilising the community’s resources to capitalise on the opportunities associated with mining, are identified as key challenges for the settlement’s sustainability.

2.21 Migration

Many mining projects create a demand for labour which is not often found locally. The skilled jobs are difficult to source from mine location as such companies resort to bring them from outside. Either way, mining activity attracts workers from other parts of the country or even from overseas.

Another form of migration associated with mining activity is in relocation of people who find it hard to purchase land of the same quality locally. This forces people to move outside mining areas in search of land or affordable housing. A Peruvian study (Bebbington, 2009) shows that in 2003, 75% of households in the 44 communities that sold land to a mining company between 1992 and 2000 had moved to neighbouring communities. Also, 17% of households that sold parcels of land moved to the city. According to interviews in nine communities who sold land to the mine, more than half were unable to purchase new lands equal to their previous holdings due to price inflation, forcing them to migrate in search of housing and new livelihoods.

2.22 Impacts on tribal people

Most mining fields are located away from developed areas. Many mines are located in tribal land populated by indigenous people. They have a strong and close association not only with the land but also the entire eco-system in which they operate. The activities of MI can create impacts on the tribal land and the eco-system jeopardising and threatening the tribal resource base. This can have significant implications on the tribal communities as briefed below.

The OK Teddy copper and gold mine are located in the Star Mountain of PNG. Since the late 1980s, an area of about 2,000 km² of downstream local rainforests has been flooded and destroyed by tailings and waste rock from the mine. This has caused tremendous social and environment harm to about 50,000 tribal people who live downstream. Their means of subsistence and activities have been disrupted as a result of heavy loads of tailings, air and soil contamination caused by the mining operations. Various tribal people m chronic illnesses including rashes and sores caused by pollution. In 1994, 30,000 tribal land owners brought a legal claim against the mining company where a negotiated settlement worth approximately \$500 Million in compensation and commitments to contained tailings was reached in June 1996. It is reported that this may not have been entirely successful in mitigating adverse impacts on the tribal communities. (World Investment report, Transnational Corporations, Extractive Industries Developments (2007).

2.23 Impacts on agriculture

The final impact of MI is in the decline of agriculture due to the expansion of mining and ancillary grounds. It is quite possible that area under agriculture declines by land taken over for mining. The higher returns from extraction sector compared to agricultural sector is the main driver for this decline. This evidence is reported in Soviet where a decline in agriculture (in terms of grain production, beef or milk production and number of reindeer). The decline has coincided with the mass scale expansion in the extractive industry in the North. Two trends are related, competition for labor pool and through damage to the natural environment that is related to the number of reindeer. (Rostankowski, 1983).

3. Political impacts

The literature reveals 4 types political impacts created by the mining industry that are discussed below.

3.1 Children rights

Human rights apply to all age groups including children. However, the rights that specifically apply to children due to their particular needs and vulnerabilities are to be differentiated from human rights. The children rights are enshrined in the Convention on the Rights of the Child, which spells out every child's right to survival; to develop to the fullest; to protection from harmful influences, abuse and exploitation; and to participate fully in family, cultural and social life. The Convention elaborates the human rights of children, recognizing the interdependence of their civil, political, economic, social and cultural rights. It also recognizes that children may need particular accommodations or protection in order to fully enjoy these rights.

Children are more vulnerable to the impacts of large-scale mining than adults, particularly from birth through age 5, when they experience formative physical development. Exposure

to chemical waste, for example, may be more serious for a child than an adult and may have lifelong impacts.

Literature reveals mining industry's impacts on children in five areas (UNICEF, 2015). The impacts are severe in the context of children living in close proximity to mining operations. The identified impacts are:

- On livelihoods and the ability to benefit from inheritance
- On their education and health services
- On their exposure to sexual harassment and economic exploitation
- Impacts from exposure to harmful waste materials, either through water they drink or air they breathe or eating contaminated food
- Impact on their living environment.

Research on and data corresponding to above areas are extremely lacking.

3.2 Human trafficking

In addition to the estimated 21.3 million refugees around the world, there are also an estimated 40.3 million people who are currently being trafficked or enslaved. More than 14 Million people are being trafficked to supply labour for mining industries, construction and manufacturing (Fisher, 2017).

By nature, MI relies heavily on low-cost labour supplied mainly by migrants, typically acquired through labour brokers. Very little attention has so far been paid to trafficking of men into extractive industries or its connection with trafficked women in the region's mining hubs. Recent reports suggest that labor-brokering practices foster human trafficking, both by exposing migrant men to lack of pay and exploitative conditions and by creating male migratory patterns that generate demand for sex workers and associated trafficking of women and girls. While trafficking in persons violates human rights, and thus remains a priority issue globally, there is little or no evidence of an effective political response to mine-related trafficking in southern Africa.

Literature (US Department of State, 2017) reveals several alarming cases of human trafficking for sex which are summarised below:

- Bolivian and Peruvian girls are subjected to sex trafficking in mining areas in Peru;
- Women and girls are subjected to sex trafficking near gold mines in Suriname and Guyana;
- In Madagascar, the government and NGOs have reported increasing commercial sexual exploitation of children related to mining sectors;
- In Colombia, organized criminal groups control sex trafficking in some mining areas;
- In Senegal, a gold rush resulted in rapid migration from across West Africa; some of these migrants are women and children exploited in sex trafficking
- In the oil industry, individuals recruited with false promises of work opportunities are exploited in commercial sex;
- Service providers in areas near camps surrounding large-scale oil extraction facilities, such as the Bakken oil fields in North Dakota in the United States, have reported that sex traffickers have exploited women in the area, including Native American women.

3.3 Impact on human rights

The natural resource extraction has become an increasingly contested and politicised form of development. There is a link between human rights abuses and extractivism. The application of human rights discourses can put pressure on governments, it has yielded limited concrete results largely because the state as a guardian of human rights remains fragile in Latin America and is willing to override their commitment to human and environmental rights in the pursuit of development. Natural resource exploitation, and the increasing number of large-scale and mega-development projects in the region, has made Latin America one of the most dangerous places for human rights activists in the world. Even progressive governments such as Ecuador have employed a zero-tolerance policy towards anyone opposing natural resource extraction. Ecuadorian authorities have led a campaign to vilify and stigmatise indigenous groups and social movements, labelling them 'environmental extremists' or 'terrorists' in an attempt to build a framework of acceptance for curtailing human rights in the name of development (Malayna Raftopoulos, 2017).

3.4 Corruption

In general, natural resources appear particularly prone to forms of corruption. However, the link between state corruption and natural resources may be more profound than this. Numerous studies have argued that those countries that are highly dependent on natural resources for national wealth creation tend to suffer from high levels of corruption in general and tend to have authoritarian systems of government (see for example Wantchekon 1999, Leite & Weidmann 1999, Jensen and Wantchekon 2004). A collective finding of these studies is that the type of natural resource is important: those classified as 'point-source' resources – such as oil, gas and certain minerals – are more problematic than resources that are diffuse, or scattered geographically (see Ross 1999, 2001).

The corruption in EI takes three types namely, incidental, systematic and systemic (Chikwanha, 2016). The features of three corruption types are summarised below.

Table 7 : Corruption Types and Features

Corruption Type	Description	Operational Scale
Incidental	Mainly by small-scale operations in the artisanal mining sector. It affects local communities directly	Increased in the last decade as a result of penetration by Chinese investors, who are operating in the artisanal mining sector and forestry, and collude with local authorities for permission
Systematic	Feature of large investments with large rewards taking place in the upper echelons of the administrative system. This form is more organised and involves a significant	

portion of public officials.

Systemic	most devastating form, as the entire governance system becomes prone to fraudulent tendencies. With systemic corruption, the legal and regulatory systems are open to manipulation, and particularism defines the 'laws and regulations to create opportunities for rent-seeking and private wealth accumulation	Widely spread in Africa and Asia
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Source: Adapted from Chikwanha (2016)

The presence of all these forms of corruption has contributed to the continued use of bribery and extortion in investors' extractive strategies and exporting decisions in the region. All three conditions identified by Klitgaard (1988) that allow corruption to flourish are prevalent in most African countries.

OECD estimates that 20% of bribery cases involve EI (quoted in Chikwanha).

The rentier state model explains the relationship between the wealth derived from natural resources and the formation of centralised government that is secretive, aggressive, paranoid and uninterested in public welfare. Where rulers are able to rely on natural resource revenue as their primary source of income, this may encourage a detachment between them and the majority of citizens. Political competition is driven by systems of patronage and conflict, and public spending is therefore not directed towards the public good but towards maintaining political hegemony. In this scenario, unproductive rent-seeking behaviour is likely to predominate over rent-producing behaviour. There is likely to be a concerted effort to weaken or compromise institutions that pose checks and balances, such as the media, the criminal justice system, civil society and academia, and there is an inclination to turn to militaristic methods of social control. This in turn encourages a noxious relationship between rulers and the military, with the latter being kept loyal through a sharing of the profits from resource exploitation.

The rent-seeking elites and public officials in underdeveloped resource-rich states are the primary source of corruption within the mining industry. It is now well documented that large foreign corporations active in the extractive industries have paid enormous bribes to corrupt governments.

Conclusions

The extractive industry's contribution to the global economy is undisputed. 167 countries continue to be engaged in the industry because of the wealth it produces. The industry also provides numerous other benefits to the local economy and society by way of employment generation, income, infrastructure development, livelihoods and literacy and educational improvement of the local population, among other benefits. It is equally important to acknowledge the adverse impacts of the industry though solid evidence is not documented in many cases as presented in the paper. The low-level of evidence on adverse impacts is attributable to weak monitoring that is taking place across many of the developing countries in particular. Even in the case of benefits, there is less evidence reported such as education and literacy improvement and livelihood enhancement in predominantly mining areas. One main reason for lack of reported evidence on both benefits and adverse impacts is the weak level of monitoring even when the policy clearly states the need for monitoring. Many countries have the legal framework for the implementation of monitoring and reporting but

the actual practice is different from what is expected. The question that is to be raised is the net benefits for mining considering the long list of adverse impacts. An analysis of net benefits to mining is vital as it provides sufficient evidence to determine the level of investments that should go back into community development as the current level appears to be inadequate. The study leads to two main recommendations: the need for comprehensive monitoring and documentation of mining activities and the need for analysis of net returns to the industry.

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