

Article Comparative analysis on the environmental and socio Impact of Mining as an extractive industry in East africa (Kenya) and Southeast Asia (Cambodia)

Abstract: This paper examines a comparative analysis of mining impacts in East Africa(Kenya) and South East Asia (Cambodia) as an extractive activity which has an abundance of largely untapped natural resource wealth. Exploitation of resources such as oil, gas and minerals has led to both positive and negative impacts. Developing countries face a major challenge in the management of land and natural resources, taking into consideration the present trends affecting the mining industry, it is increasingly important to assess the social and environmental impacts of mining at the community level.To assess such impacts. The study demonstrate clearly that there are significantly great social and economic benefits to local communities, but they do not come automatically and their sustainability is a key issue. While mining has long been important throughout the country's history, recent decades have shown steady expansion in the mining sector which, unfortunately, has not been matched by advances in regulatory compliance and accountability in government and the private sector. This is creating a glaring gap between the current laws enacted to protect the environment and the rights of citizens, and the unfortunate reality of uncontrolled extractive industry activity potentially creating significant and irreversible social and environmental impact in these developing countries. Extractive industry is classified as high-risk projects and vulnerable communities in Kenya and Cambodia need to know of these impacts. Mitigation of the impacts related to environmental, health and safety issues is necessary.

Keywords: Mining, Kenya, Cambodia, Environmental and Social Impacts, legal and policy framework, extractives.

1. Introduction

1.1. Objectives

This paper looks at understanding the impact of mining on local communities before, during and after the life of a mine for responsible mining. Assess impacts of mining both on large scale, artisanal and small scale operations in the community. There are challenges facing the mining community especially small-scale operations and artisanal miners since they operate using rudimentary tools and techniques. In most cases they operate due to an increasing difficulty of earning a living from agriculture and other rural activities and also taking advantage of unearthing smaller mineral deposits that wouldn't be financially worthwhile for large companies to extract. It is also an option for unskilled workers in the community. Even though it improves communities livelihoods, artisanal mining can also violate property rights, cause friction within communities, damage the environment and, as an example they are exposed to mercury which is extremely dangerous to one's health, including irreversible brain damage and to the environment.

lack of information and understanding by the community especially around the Mining Act, Energy Act, Environmental Management and Coordination Act and various other pieces of legislation in the extractives area such as the Land Act and Land Registration Act. In relation to the extractive industry, communities have little or no knowledge about this legal information and this makes it difficult for the stakeholders to come to an agreement in terms of resettlement, compensation and sharing of revenues. New ways of capturing and analyzing the data could help to gradually turn the situation around.

1.2. Contribution to the literature

The increasing profile of the extractive sector in the Kenya and Cambodia has raised expectations among different stakeholders¹. Government expects that the extractive sector will bridge the national budget deficit and lower public debt while increasing export earnings, increasing GDP growth and spurring infrastructure development. Multi-National Corporations (MNCs) and private businesses expect to increase profits. Communities living in mining areas expect that the discovery of extractive resources will foster growth and development that will trickle down to eradicate poverty and create employment for them. Evidently, these different stakeholders have varied interests. Given the fact that all three have to go through a political process in order to achieve their expectations, their individual ability to influence the political process is critical in determining success. Of the three ES stakeholders i.e. government, mining companies and communities, the latter are usually ranked as having the least power of influence than the former two based on social position, political power, connection, knowledge, expertise and financial resources or infrastructure.

2. Background

2.1. Mining

The social and environmental impact of mining in Kenya and Cambodia is a subject that is often not included in the agenda that is not discussed widely, despite its importance. Indeed the impact of mining on the environment and population, although it is often known, must be researched. However, without regulation in the economic and political levels, the impact on local populations could remain largely negative. According to "World Gold Analyst" West Africa is the region where, over the last five years, most new gold mines have been exploited, including Ghana, Mali, Guinea, Burkina Faso, Mauritania and Ivory Coast². The speed at which the consequences of human actions affect society and the environment requires a fast response.

Kenya is famous for its unique physiography, wildlife attraction and most valuable natural assets that are rich agricultural land, in recent years with the discovery of natural wealth which remains mostly unexploited, the country is harnessing to move from an Agriculture and tourism based-economy to one that is based on mineral resources. It is located in East Africa, along the equator and bordering the Indian Ocean to its east. It shares boundaries with Tanzania, Uganda, South Sudan, Ethiopia and Somalia. The total area of the country is 581,309 km² and has a population of roughly 49 million. As of 2018 estimates, Kenya had a GDP of \$85.980 billion making it the 69th largest economy in the world. Per capita GDP was estimated at \$1,790. Kenya is the economic, transport and financial of East Africa but its economic development has been impaired by weak governance, political instability, corruption and violent clashes since gaining independence in 1963.

The mining and quarrying sector in Kenya accounts for less than 1 percent of gross domestic product, with the majority being contributed by the soda ash operation at Lake Magadi in south-central Kenya. A wide range of minerals, both metallic and industrial, is known to occur in the country. Apart from soda ash, the chief minerals produced are limestone, gold, salt, large

¹ [Problem analysis of local communities in Kenya](#)

² [Indeed the impact of mining on the environment and population, although it is often known, must be researched.](#)

quantities of niobium, fluor spar, and fossil fuel. According to the Mining Act, all unextracted minerals are government property. The Department of Mines and Geology, under the Ministry of Environment and Natural Resources, controls exploration and exploitation of such minerals.

Kenya's chief exports are horticultural products and tea. The major destinations for exports are the United Kingdom (UK), Tanzania, Uganda, and the Netherlands. Major suppliers are China, India, United Arab Emirates, Saudi Arabia, and South Africa. Kenya's main exports to the United States are garments traded under the terms of the African Growth and Opportunity Act (AGOA). Despite AGOA, Kenya's apparel industry is struggling to hold its ground against Asian competition and runs a trade deficit with the United States. Many of Kenya's problems relating to the export of goods are believed by most economists to be caused by Kenya's export of inexpensive goods that saturate the global market but do little to substantially raise the amount of money coming into the country³.

The mining sector is all set to expand to a greater level in the coming years as the recent increase in global demand for minerals has seen several Australian and other mining companies seeking permission from the Kenyan government to explore its mineral reserves. The first ever large-scale mine in the country, Kwale mineral sands mine project 2013 operated by Base Resources of Australia.

Cambodia's economy depends mainly on several sectors including tourism, garments, agriculture constructions and taxation, with a total population of over 16 Million. It is located in Southeastern Asia, bordering the Gulf of Thailand, between Thailand, Vietnam, and Laos. The country mostly has a tropical climate and covers a total area of 181,035 km². Based on the Economist, IMF: Annual average GDP growth for the period 2001–2010 was 7.7% making it one of the world's top ten countries with the highest annual average GDP growth. Tourism was Cambodia's fastest growing industry, with arrivals increasing from 219,000 in 1997 to over 2 million in 2007. In 2004, inflation was at 1.7% and exports at \$1.6 billion US\$. Cambodia graduated from the status of a Least Developed Country to a Lower Middle Income country in the same year 2016⁴. With the discovery of untapped natural resources extractive industry offers another prospective source of income for the economy growth and national development of Cambodia.

In recent years, the Cambodian government has been focused on building its mining sector, leading to the establishment of a new framework of mining laws and regulations closely patterned on the Western Australian model. Foreign Direct Investments have subsequently been attracted into the country given its largely unexplored resources, open market environment, and supporting from the government to improve business environment like the provision of many tax incentives. Cambodia's 2016 regulatory framework offers mining companies a more clearly defined licensing application process, a favorable 30-percent tax and a 3-percent royalty rate on precious metals. The mining code also allows for wholly foreign-owned mining companies to receive licenses.

Mineral exploration projects are divided into four parts such as metallic minerals, non metallic mineral/industry minerals, gemstone, and coal. Currently, mineral production and exploration licenses granted to both foreign and local companies have been increased in Cambodia. The

³ [Kenya country profile. Library of Congress](#)

⁴ [World fact book publications](#)

mining and quarrying sector in Cambodia accounts for less than 1 percent of gross domestic product.

Cambodia's mining sector has been embroiled in scandals that experts have said were due to corruption and the government's failure to regulate the industry. In 2016, United Nations trade data showed USD752 million of sand imports to Singapore from 2007 to 2016, while Cambodia's figures only reflected about USD5 million in exports during that time⁵.

In September 2016, the first industrial mining license for gold was issued to a mining company working in Ratanakiri called ANGKOR GOLD CORP, which the company has been actively exploring over the past 6 years. The company has now covered all tenements with stream sediment geochemical sampling and has flown low level aeromagnetic surveys over most of the ground. ANGKOR has drilled 21,855 metres of NQ core in 190 holes, and has collected in excess of 110,000 termite mound, 'B' and 'C' zone soil samples in over 20 centres of interest over a combined area of over 140km², in addition to numerous trenches and detailed geological field mapping. Exploration on all tenements is ongoing⁶.

The mining sector has grown steadily in Kenya and Cambodia. Some negative impacts were reported: displacing small-scale miners, restricting access of local communities to areas they depended on for their livelihoods, violating communities' traditional lands, and poisoning water sources.

3. The Kenya and Cambodia Case study

This section will highlight and discuss grievances made by local communities on the environmental and social impacts of mining activities carried out in Kenya and Cambodia and compare the results with the legal and policy frameworks regarding mining and environment and the impact assessment reports, are they mitigable, What is the practise and what more can be done. The methodology used to gather the information was by conducting a comprehensive and in-depth literature review on policy and legal framework governing impact of mining in Kenya and Cambodia and focusing on community participation provisions issues in the sector, research, identification and gathering of reference Materials by Identifying relevant sources of information; Legal policy documents related to mining Acts, Print media articles, Electronic media documentaries, Academic papers, Books, write-ups, government reports, International journals and UN case studies, Private Sector Assessment Reports, Feasibility Studies for mining and Impact Assessment reports, Interviewed key persons/players and stakeholders in the mining sector.

Both countries have built an institutional framework and organizations to support the mining industries. The mandate of the Ministry of Mining (MoM) is centred on developing and implementing policies that will allow the country to benefit from its mineral wealth.

The following are supporting policies associated with mining and environment in Kenya and Cambodia, which raises concern such as Inadequacy and lack of clarity of existing Mineral Law, Use, Development and Exploitation Concessions, Lack of enforcement of existing law and Access to information.

⁵ [mining corruption in sand export](#)

⁶ [first commercial mining license in Cambodia](#)

Legal and Policy Frameworks Regarding Mining and environment in Kenya and Cambodia

3.1 Kenya

There are also several domestic policies that provide necessary support to the mining Acts by ensuring mining activities are carried out in a sound manner that does not impinge the environment but strengthens sustainable development. The policies are largely stipulated in the following Acts in Kenya:

3.1.1 The Environmental Management and Coordination Act (EMCA) 1999

The act provides a coordination mechanism for various sectoral laws dealing with elements of the environment. Section 58 of the Act provides for an Environmental Impact Assessment (EIA) for all projects, programmes or policies likely to have adverse environmental impact. The projects that must undergo a mandatory EIA as outlined in the second schedule of the Act. This is the case with all the project activities of the extractive industry starting from prospecting, exploration, mining to the actual downstream production of the refined natural resource. Under the EMCA 1999: A project proponent shall not implement a project likely to have negative environmental impact, or for which an EIA is required, unless an EIA has been concluded and approved in accordance with the law. No licensing authority under any law in Kenya shall issue a trading, commercial or development permit or license for any project for which an EIA is required unless the applicant produces an EIA license issued by the National Environmental Management Authority (NEMA). The Act also deals with pollution prevention and waste management both which are associated with mining activities as it generates different categories of waste during operation. These waste is often a bone of contention and source of conflict in communities; and these will be discussed in this paper.

3.1.2 The Water Act, 2002

This Act is concerned with sustainable management of water resources. It prohibits activities that may cause pollution of water sources for domestic, industrial, agricultural or recreational use. Water polluted from mining, and particularly gold, has frequently resulted in negative environmental and health impacts. Section 25 of the Act requires a permit to be obtained for any individual drawing large amounts of water from a water resource or discharging any form of pollutant in a water resource.

3.1.3 The Public Health Act

This Act seeks to secure and maintain public health. Some of its provisions relevant to the extractive industry include prohibition of destructive activities such as oil spillage, dust and air pollution or any other condition deemed injurious or dangerous to human health. According to Part IX Section 115, no person will be allowed to cause any nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires local authorities to take all lawful, necessary and reasonably practicable measures to maintain their jurisdictions clean and sanitary to prevent conflicts that may lead to any injurious condition to human health.

3.1.4 The Land Planning Act

This Act is the overall planning law for land on both agricultural and constructed environments. Under this Act, all development or changes to land use must be approved by a planning authority.

Increasingly, this is anticipated in Kenya as vast amounts of pastoral grazing lands are converted to mining zones particularly in Kwale, Turkana and Kitui Counties. Section 9 of the subsidiary legislation (the development and use of land legislation 1961) stipulates that before any plans are submitted to the Cabinet Secretary for approval, steps should be taken to acquaint the owners of any land affected by such plans and that public views should be obtained and considered in decision making. This is meant to reduce conflict between or among competing interests.

Physical Planning Act, 1999 This act provides for the preparation of a physical development plan for the purpose of improving the land and providing proper physical development of the land. It also includes other necessities such as ideal transportation, public utilities, commercial, industrial, residential and recreational areas, including parks. It also makes provision for future land use for buildings or any other purposes.

3.1.5 The Physical Planning Act

provides for the control of development and use of land in particular areas, especially where a project may involve sub-divisions or amalgamations of land parcels or located in an area otherwise reserved for other use.

3.2 Cambodia

The following are Supporting Laws and regulations related to environment in mining activities in Cambodia:

3.2.1 The Law on Management and Exploitation of Mineral Resources (hereafter, “Mining Law”),

The purpose of this law is to determine the management and exploitation of mineral resources, the manipulation of mines and all activities relating to the mining operation. Section 21 deals with the obligations of license holders or subcontractors for the proper conduct of exploration and mining operations including the health and safety of workers and public safety as well as prioritizing the employment of Cambodian nationals and ensuring their education and training in the industry. Also provides that the Ministry is to provide a competent authority responsible for supervising these criteria.

3.2.2 The Law on Environmental Protection and Natural Resource Management (hereafter, “Environment Law”)

This law protect and upgrade the environment quality and public health by means of prevention, reduction and control of pollution. It makes assessment on impacts to environment, before issuance of decision by the royal government on all submitted proposed projects; encourage and provide possibility to public to participate in the protection of environment and the management of the natural resources and suppress those acts which may affect to environment

3.2.3 The Law on Forestry,

This law defines the framework for management, harvesting, use, development and conservation of the forests in Cambodia. The objective of this law is to ensure the sustainable management of these forests for their social, economic and environmental benefits, including conservation of biological diversity and cultural heritage (Article 1). This law applies to all forests, whether natural or planted. The State ensures customary user rights of the forest products and byproducts

for local communities and as further provided in the provision of this law or other relevant laws (Article 2). Article 35 defines exploitation as follows; quarrying, soil and sand excavation, mining, and other natural resources extraction, conducted within the Permanent Forest Reserves, shall require a prior study-evaluation from the MAFF, authorization of the government, and be in compliance with Article 4 of this law. Such authorization shall state the protection and restoration measures for the site for quarrying, soil and sand excavation, mining and other natural resources extraction, whereby the holder of such rights shall be responsible to: 1) Avoid causing or aggravating soil erosion, damage to growing vegetation, damage to hydrologic systems and the quality of water, 2) After project completion, to restore the site of quarrying, soil and sand excavation, mining or other natural resources extraction, to the original state within the time frame set by the permit. It also shows the basic conditions for mining activities within the Permanent Forest Reserves.

3.2.4 The Subdecree on EIA Process,

This is an auxiliary subdecree for the Environmental Law which obligates the MoE to examine EIAs. EIA reports must describe a) environment impacts caused by project activities, and b) environmental protection measures to stop or minimize each impact.

3.2.5 The Subdecree on Water Pollution Control,

The purpose of this subdecree is to regulate water pollution control in order to prevent and reduce the pollution of the public water areas to ensure the protection of human health and the conservation of biodiversity (Article 1). This subdecree applies to all sources of pollution of public water areas (Article 2).

3.2.6 The Subdecree on Solid Waste Management

The purpose of this subdecree is to regulate solid waste management in a proper technical manner and safe way in order to ensure the protection of human health and the conservation of biodiversity (Article 1). This subdecree applies to all activities related to disposal, storage, collection, transport, recycling, dumping of garbage and hazardous waste.

3.3. Environmental and Social Impacts of exploiting minerals in Cambodia and Kenya

Summary of key impacts reported by local communities, Without access to the relevant EIAs in Kenya and Cambodia, it is not possible to assess the potential impact and to what extent mitigation measures proposed by the companies are adequate. Below are impacts already being reported by local communities to NGOs, mainstream media resulting from the exploration or illegal exploitation activities of mining companies.

<ul style="list-style-type: none"> ● Social impacts 	<ul style="list-style-type: none"> ● Isolation of communities, displaced(breaks the bond of communities ● Loss of the sentimental attachment to the ancestral 	<p>Mitigation measures The legislations, the constitution and frameworks for addressing these challenges are well articulated. The challenge is communication. The audits can be done. Are they</p>
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	<p>land(religious, cultural belief)</p> <ul style="list-style-type: none"> ● People lose their economic and social points; schools, markets, hospitals ● Conflicts are likely to arise: the relocated families going to land that belong to other people: one would be looked at as a stranger, rejection; the relationship between the community and the investors are also interfered with. ● A smaller pieces of land allocated to a family that is bigger than what they are given. ● Double or tripple land allocation : more than one family allocated the same piece of land. ● Relocation can lead to prostitution which can lead to financial mismanagement by families (men who go for you girls and using their money on them) ● School drop out because children would want to work in the mines as opposed to going to school. ● Erosion of cultural practices due to foreign culture being introduced. ● Loss of land rights: compensation without being given where to 	<p>adequate?</p> <ul style="list-style-type: none"> ● Yes: the problem is the attitude of the investor, and the community: policy action gap. E.g. compensation which is fairly, justly, but the money is not used adequately: there should be prior preparation of the community before compensation. ● Have a programme that monitors and follows up on how the relocated families are faring on. ● Are the environment bonds adequate to support the restoration of the environment? ● When you cut tree, you plant one; there should be emphasis on the implementation of Corporate Social Responsibility as a mitigation measures ● The role of partnerships In mitigation. ● If there is no skill and capacity to exploit minerals; it is better to leave it on the ground as a policy option.
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	<p>go.</p> <ul style="list-style-type: none"> ● Spread of disease becomes high: the framework/structure of the artisanal mining. ● The communities are brought together creating an opportunity for growth; new skills and expertise at the local level ● Job creation and technology transfers to improve the community: schools, electricity, water ● Extractives and gender, women do not have title deeds, the benefits are given to men who will squander the money leaving the women with children. ● Communal politics as people will look at the newcomers as likely to influence the outcome of the political dynamics. ● Human Wildlife conflict; pressure in the new location which is likely to affect the wildlife; this is also seen due to toxic releases. ● The national government, politicians tends to work very closely with the investors at the expense of the community 	
<ul style="list-style-type: none"> ● Environmental impacts 	<ul style="list-style-type: none"> ● Water In Kwale: The authenticity of the environmental Impact 	

	<p>assessment is still in question; there is a river blocked and a dam built; Titanium in Kwale(Kenya) and the water in the river of Prek Te in Kratie contain chromium and cyanide. The substances were found at various mining sites between Kratie and neighboring Mondulkiri and the ministry believed that they were improperly handled and the rain washed them into the river.</p> <ul style="list-style-type: none"> ● Pollution: Air, Land, Water, Noise, Visual; which are not clearly highlighted in the EIA, which brings to question the validity of the report. ● Land degradation: Deforestation; method of mining is not sustainable: open field; Overgrazing ● Loss of bio-diversity; ● Toxicity, and radioactive elements; which finds its way to the local food chain (Titanium), and the death of animals(Needs more research to establish) 	
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4. Discussion

4.1. Mineral resource development cycle, Exploration and exploitation phase

There are Various stages or different phrases of mining projects that is practiced in Kenya and Cambodia, beginning with availability of land resource, mineral ore exploration and ending with

the post-closure period. In this section we will discuss how the adequacy of legal and institutional framework in regulating exploration and exploitation in Cambodia and Kenya in relation to the socio and environmental impact of mining activity.

4.1 Available Land resource

This is a critical starting block as such mineral resources are hidden, concealed and buried below the ground. The most difficult aspect at this stage is finding a deposit worth mining. Once the discovery the government expects that the extractive sector will bridge the national budget deficit and lower public debt while increasing export earnings, increasing GDP growth and spurring infrastructure development. Multi-National Corporations (MNCs) and private businesses expect to increase profits. Communities living in mining areas expect that the discovery of extractive resources will foster growth and development that will trickle down to eradicate poverty and create employment for them. Currently with the mining activities

In both countries it is observed that there is lack of availability of current geo data on mineral deposits and a stable regulatory environment for investors and this makes the countries lose fairly good opportunities to explore its mineral resources. The mineral resource sector in Kenya and Cambodia is marked by the lack of transparency which results in poorly negotiated mineral concessions with fiscal terms that are sub-optimal and do not maximize the net present value of mineral investments. This means that a lack of transparency is actually built into the legal framework. However, the Environment Law provides that all license-holders must conduct an Environmental Impact Assessment (EIA), follow an environmental management plan and to restore and rehabilitate the area once the license expires. Additionally, on request from the public, the Ministry of Environment (MoE) should provide information on its "activities" and encourage public participation in environmental protection and natural resource management. This is an example of overlapping jurisdiction and a conflict in the law regarding disclosure of these important documents.

4.2 Exploration phase

This phase takes approximately 8-10 years. This stage involves exploration license, programme of work, proof of financial capacity and annual activity reports. It needs technical skills to be employed for the success of mining in Kenya and Cambodia. Popular job titles for the exploration phase commonly employ geologists, prospectors, pilots, drillers, assayers, equipment operators, surveyors, mechanics, camp cooks, all who are vital ingredients in the discovery of viable mineral deposits. In both countries there is in for instance in Kenya At the launch of the mining engineering programme locally, interest was low as most students and parents did not see the rationale for such a course as very little was heard of in mining. Enrolment started with a pioneer class of six (6) students, progressed to fifteen and eventually stabilized at about twenty-five (25) per admission cohort. It was not until oil was discovered in March 2012 and gas in September 2012 that a sudden rush for the course began, with the admissions being capped at about sixty (60) due to inadequate infrastructure capacity for training and research. The Petroleum Engineering programme was not launched locally until 2013/2014. The teaching of the programmes on extractives faces several challenges, including lack of adequate engineering

infrastructure and faculty. Additionally, universities face serious challenges from engineering professional registration bodies which sometimes impose very stringent conditions hard to come by in this field with very few local experts⁷. If there is no skill and capacity to exploit minerals; it is better to leave it on the ground as a policy option.

Small-scale miners have been linked to pollution and mercury poisoning in gold mining in parts of Kenya. In most cases they operate due to an increasing difficulty of earning a living from agriculture and other rural activities and also taking advantage of unearthing smaller mineral deposits that wouldn't be financially worthwhile for large companies to extract. According to a report published by the National Environmental and Complaints Committee, gold miners in Migori, Kakamega, Vihiga, Nandi, Siaya, Turkana, Homa Bay, West Pokot and parts of Narok counties in Kenya use dangerous metals in the extraction process. Mercury used by the miners is laced with cyanide and is a major source of pollution in gold mining areas. Exposure to heavy metals used in gold mines has been linked to respiratory and heart diseases as well as kidney failure. Medical records showed that 40 per cent of women tested for mercury had more than one part per million, exceeding safe exposure levels. Use of heavy metals in mining activities has also affected the environment, water sources and agricultural activities in the nine regions. This leads to death of fish and other aquatic organisms and water poisoning. During rain seasons, mercury and cyanide spreads out to farms⁸.

In Cambodia by using the available mineral and geological data, so far there are around 91 companies (from Australia, China, Vietnam, Thailand, and domestic) licensed to conduct 139 exploration projects. Currently, they are being under their exploration phase. However, the preliminary results showed that about 17 of 139 exploration projects were confirmed positive. Up to now 13 of 91 companies (5- China, 3- Thailand, and 5- domestic) have been licensed to conduct 13 mining projects, gold (4), iron (1) coal (1), limestone (5), and phosphate (1). For the first quarter of 2013, three mining project proposals, one gold project in Mondul Kiri province, one coal project in Kratie province and one silica sand project in Kampong Som province, were submitted to Ministry of Industry, Mines and Energy for review and approval⁹.

One of the impacts is seen where communities from Mondul Kiri province complained and demanded government to block gold mining operations on their land since it destroys their livelihoods, livestock and their health¹⁰. And people appear to have resumed illegal mining activities at a gold mining site in Kratie province, which was shut down by authorities in August 2017 after four miners were killed¹¹. This happened due to the government's failure to oversee mining operations and halt illegal activities. In the same year, a number of villagers in Kandal province, near the capital Phnom Penh, lost their homes or portions of their homes after several riverbank collapses near an area where four companies are engaged in sand dredging¹².

The Law on Management and Exploitation of Mineral Resources (hereafter, "Mining Law"), in Cambodia needs to provide the duty to safeguard and enhance the environment. In other words, every person entitled to enjoy the right to a clean and healthy environment has a duty to protect

⁷ [Human and institutional analysis](#)

⁸ [revealed misery of mining in Kenyan counties](#)

⁹ [mineral investment in Cambodia, exploration stage](#)

¹⁰ [complaints from Mondul Kiri communities on gold mining in their land](#)

¹¹ [miners back at scene of fatal collapse](#)

¹² [effect of sand dredging in Kandal's Koh Kor village](#)

the environment and promote sustainable development. This, in essence, is important in that it binds the government and foreign investors seeking to explore or exploit minerals in Cambodia to protect the environment. It needs to compel the government to ensure that all natural resource exploitation agreements it enters into safeguard and protect the environment.

The community interests in mineral exploration and exploitation in both countries is based on the community rights over the affected land and the need to safeguard the interest of future generations. The government has a public interest in safeguarding the best interest of its citizens especially with respect to the right to property and the environmental right to clean, safe and healthy environment. In most cases, therefore, this interest is safeguarded by putting in place a simple, stable, predictable, efficient and unified regulatory framework and mitigates the adverse social and environmental impacts of mineral development since this phase may involve clearing of wide areas of vegetation (typically in lines), to allow the entry of heavy vehicles mounted with drilling rigs and construction of transport systems. The immediate concern of local communities in Cambodia and Kenya is how to make the most of the exploration opportunity by agitating for preferential access to employment and training opportunities availed by the mining companies. For instance, in late 2017, after Chinese mining firms began to operate in Monduliri province (Cambodia) the community would be interested to realise improved standard of living by tapping the resources accruing from the exploration and mining activity. Further, communities are interested in guaranteeing minimal disruption to the cultural and communal way of life, access to their environmental right to clean, healthy and safe environment and public participation in the decision to explore and mine gold within the community's area of occupation. On the other hand, there is the question of whether the public interest is generally protected through the state in so far as revenue collection and allocation are concerned. It is important therefore to examine whether the current legal, policy and institutional framework on mining exploration and exploitation is capable of safeguarding the social, economic and environmental welfare of the local community in the area of exploration and exploitation

The need for sustainable land management is enshrined in Kenya's Constitution (2010). For instance, Article 60 on Land and the Environment stipulates that; (1) Land in Kenya shall be held, used and managed in a manner that is equitable, efficient, productive and sustainable. Two of the principles of land use mentioned include sub-article (c) sustainable and productive management of land resources; and sub-article (e) sound conservation and protection of ecologically sensitive areas. Under Article 42, the Constitution further states that "Every person has the right to a clean and healthy environment", which includes the right; (a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and (b) to have obligations relating to the environment fulfilled under Article 70. Article 69 on Environment and natural resources stipulates that the State shall— (a) Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits; (b) Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya; (c) Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities; (d) Encourage public participation in the management, protection and conservation of the environment; (e) Protect genetic resources and biological diversity; (f) Establish systems of environmental impact assessment, environmental audit and monitoring of the environment; (g) Eliminate processes and activities that are likely to endanger the

environment; and (h) Utilize the environment and natural resources for the benefit of the people of Kenya. The Kenya Vision 2030 commits the country to mitigate unintended adverse land degradation. attention needs to be paid to the rate of conversion of previously pristine lands to more exploitative uses as these have bearing on the country's agricultural sector, natural resource base and eco-environmental balances. Some of the effects of poor land use practices are felt by land users themselves as discussed on the grievances mentioned by the communities.

5. Conclusion and recommendations

To understand the impact of mining on local communities before, during and after the life of a mine for responsible mining. Assess impacts of mining both on large scale, artisanal and small scale operations in the community. There is need to

5.1 Link contaminated water with the mining companies, have the political will to enforce the laws that already exist. The laws relating to mining should be able to protect the land owner from exploitation and getting raw deals. There is poor implementation of land and mining related laws.

5.2 All parties/ stakeholders be involved at all stages of EIA process for participatory decision making and have Environmental Audit reports made public and accessible to the public. Workers and communities to build dialogue and be informed and fully participate in decision making on the measure of Environment, health and safety Measures since they are put in place to protect miners and more so artisanal/ small scale miners from diseases and injury during mine operation and after closure.

5.3 Restoration of mining land; it is whose duty and are environmental bond sufficient, The question of rehabilitation of quarries has been there for a while. Quarry mining in the areas is a lot of times not done properly, leaving the quarries open and becoming endangering zones. Stories of quarries left gaping, and serving as deathtraps of harbingers of ill health to local communities abound. The relevant government institutions should put stern measures to curb the menace. This also involves, public, community and private land for proper use and management of land and natural resources.

5.4 To meet the requirements of a transformed economic structure, each country will have to build upon or transform existing institutions with a view to equipping them to meet present and future demands. Properly resourced state institutions are key to the development of the industrialized and competitive economy.

5.5 Government agencies from both countries should urgently investigate the allegations of illegal mining activities and environmental and social impacts made by the affected communities.

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