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A Discussion Paper on Sustainable Practices in Sierra Leone's Mining Sector presented to the 20-22 June 2012 Biennial Conference of Sierra Leone Institution of Engineers

We are working towards a sustainable Sierra Leone by applying our engineering and technical experience, knowledge and ideas.

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Sustainable Practices in Sierra Leone's Mining Sector

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1. Introduction

1.1 Term of Reference

Rokel Technical Advisory Panel (RoTAP Ltd) is a UK charity of Engineering and Technical professionals with links to Sierra Leone. RoTAP exists to provide support to Sierra Leone Institution of Engineers (SLIE) by using their knowledge, experience and relationships with international engineering institutions. As a diaspora organisation, RoTAP forms part of the civil society of concerned citizens of Sierra Leone.

This paper is presented in response to an invitation from SLIE to participate in its biennial conference of 20-22 June 2012. This paper addresses sub theme (iii) of the conference on the National Sustainable Development Agenda.

The aim of the paper is to make recommendations to improve current practices in line with the national and international sustainability agenda and to address SLIE's objective as set out in the agenda to the conference.

1.2 Outline of Paper

It must be stressed that the views and ideas discussed in this paper do not represent an expert opinion or position on the matter. However, they are offered from the perspective of concerned citizens who want to engage in the sustainable debate in the on-going development of Sierra Leone.

The areas identified as priorities and which are covered in separate sections of this paper are:

- a. engagement and involvement of Stakeholders
- b. procurement and issuing of contracts and concessions
- c. managing and minimising damage to the environment and ecology

1.3 The Sustainability Agenda

It is fortuitous that SLIE is holding its biennial conference on Mining and the Economy of Sierra Leone at exactly 20 years since the Earth Summit in Rio de Janeiro and coinciding with the 20th annual conference of the UN Commission on Sustainable Development taking place in Rio in June 2012, in recognition of the significance of the 1992 Earth Summit.

An agreement of the Rio Earth Summit that had a direct bearing on mining activity was "*not to carry out any activities on the lands of indigenous people that would cause degradation or that would be culturally inappropriate*". The paper will examine some of the key changes in Sierra Leone's mining sector and consider where there is still scope to embrace more sustainable practices.

Implementation of the principles of the Declaration on Environment and Development has met with opposition from the world's poorest countries which includes Sierra Leone. They feel they are being encouraged to leapfrog the traditional industrialisation path taken by the industrialised and developed countries and to become role models for green economics.

This paper examines the alternative avenues open to the mining sector in Sierra Leone to embrace some of the principles of sustainable development without compromising the long term return and benefits to the national economy.

1.4 Sierra Leone's Mining Sector

Sierra Leone is blessed with rich mineral deposits of both precious and high value industrial minerals. Sierra Leone's primary mineral resources are diamonds, rutile, bauxite, gold and iron ore. Sierra Leone mining sector has been established since the 1920s.

However, the civil war in the 1990s led to almost all the large mines ceasing operations until the early to mid 2000s when new mining concessions were re-negotiated by the Government.

Sierra Leone is experiencing a resurgence in economic activity partly driven by the earnings from export minerals with the country receiving 20% of GDP from mining.

It is considered the mining concessions that were negotiated in the post war Sierra Leone may not have provided the best arrangement in terms sustainable development. This could be attributed to the fact that Sierra Leone was seen both as a frontier territory and high risk and competition for concessions was not high.

The Table 1 below is a summary of the major mining operators currently in Sierra Leone.

Hematite (Iron ore)

There are two major concessions companies operating in the northern province of Sierra Leone (Tonkolli District), African Mineral and London Mining. African Minerals being the major concessionaire has embarked on a programme of significant infrastructure development to deliver their operations including a new railway line and new port expansion project.

The forecast output of African Minerals is set to grow from 15Mtpa up to 95Mtpa making Sierra Leone a major producer of iron ore. London Mining production in the Marampa area is set to rise from 9Mtpa to 16Mtpa over the 25 year concession period.

Bauxite

Bauxite, the ore from which aluminium is obtained, is mined by Sierra Minerals Holdings in Gondama in the southern province of Sierra Leone. Sierra Minerals Holdings exports about 200Mtpa. There are other bauxite occurrences in the Pujehun, Port Loko districts and Western area.

Rutile

Rutile is mined by Titanium Resources (Sierra Rutile) by Sierra Rutile at Imperri Hills in south west Sierra Leone. The mines produce Rutile with by-products of Ilmenite and Zircon. Sierra Leone has the largest deposit of rutile in the world and is one of the world's major producers.

Kimberlite diamonds

Koindu Holdings is the first open cast kimberlite mine in Sierra Leone, based in the eastern province of Sierra Leone. Their operations are at two sites - Tongo and Koindu. Output and export details are not in the public domain.

Table 1 – Major Mining Operations

2. Involvement and Engagement of Stakeholders

2.1 Overview on Stakeholder Management

The Association for Project Management Body of Knowledge define stakeholder management as *'the systematic identification, analysis and planning of actions to communicate with, negotiate with and influence stakeholders. Stakeholders are all those that have an interest or role in the project or are impacted by the project'*. It is the accepted view that for a development to be sustainable all the key stakeholders need to be engaged and support the project's success. There are many case studies in the mining and oil industries where the needs of the stakeholders have not been fully considered or at the worst ignored which have resulted in damage to the environment or led to social conflict and community decline. For example with the Ogoni in the Niger delta (Nigeria) where there are reports of widespread environmental damage and community disenfranchisement.

The Stakeholders in an industry of major national significance like mining are many and complex. In Sierra Leone's mining sector the stakeholders exist at both the local, national and international levels as most of the investment in the mining sector is from outside the country. Sustainable development requires a balance between the needs and interest of stakeholders whilst satisfying the business objectives.

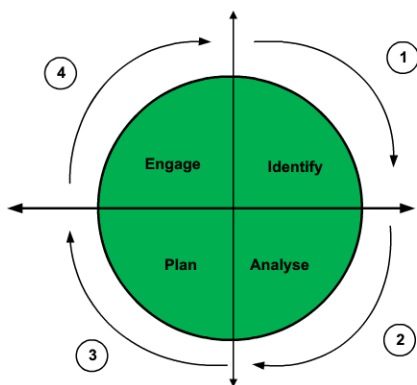


Figure 1 - The Four Stage Stakeholder Management Process

Figure 1 outlines the process of engaging and involving stakeholders in order to build strong empowering relationships. This process is of equal relevance to national government seeking to offer the best deal for its people in negotiating concessions. The government of Sierra Leone in 2012 issued for the first time its draft Local Content Policy which begins to

set the framework to engage with *out-of-country* investors. The Local Content Policy offers some of the sustainable benefits to Sierra Leone, in areas like skill transfer, community empowerment and cohesion and a monitoring and evaluation framework.

2.2 Who are the Stakeholders?

The stakeholders in Sierra Leone's mining sector are at two opposite ends of the spectrum in terms of make-up, requirements, power and ability to influence outcomes.

The stakeholder map in Figure 2 is a simple illustration of an extremely complex series of transactions and relationships. The ability and effort to analyse and begin to define the stakeholders' needs and levels of influence will be the major contribution to the mining policy for Sierra Leone that is 'joined up' and focused on sustainable development the meets its citizens' requirements.

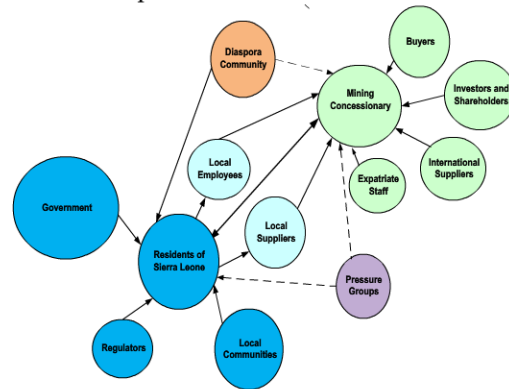


Figure 2 - Mining Sector Stakeholders

2.3 What are their needs and level of influence?

In analysing the needs of stakeholders in the mining sector, careful consideration should be given to defining the position of each stakeholder objectively as illustrated in Figure 3. In order to move a stakeholder from a position of low or no influence, their bargaining stake should be examined and how it could be enhanced to influence the design of a mining concession.

It is not entirely satisfactory to award the concession to the bidder with the highest bid on the basis of its monetary value. The legacy benefits and other aspects of stakeholder needs should be taken into account when awarding concessions. Mining is an industry of high national significance and its environmental, social and community impacts, if not managed

well, could have negative consequences for several generations.

African Minerals the concession company mining iron ore in the Tonkolili district have in their plans (and already in development) to build a port at Tagrin with a railway link to the mine in Tonkolili district. The use of the railways to transport mining freight is laudable, though it would be more effective if these proposals were part of a national transport strategy.

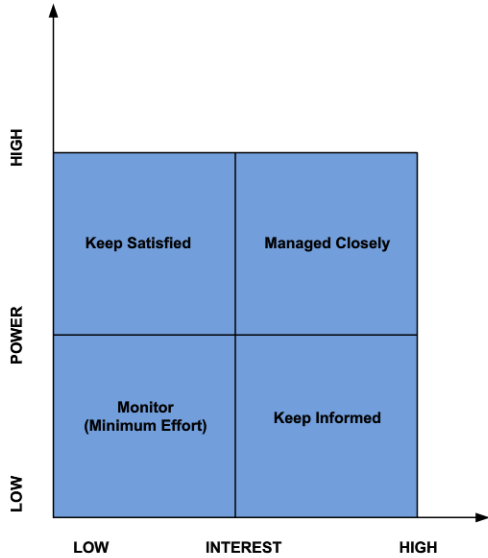
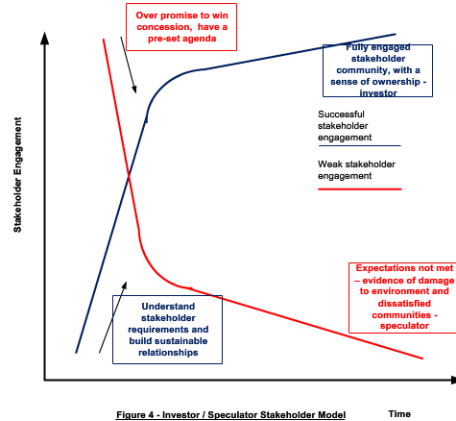


Figure 3 - Stakeholder Mapping

2.3 Engaging with Stakeholders

All good relationships are based on trust and open transaction and it is no different between organisations, countries and industrial relations. Figure 4 illustrates the difference between a long term investor relationship and that of a short term speculator. To deliver sustainable development to the local communities in Sierra Leone, short term speculative activities should be discouraged as far as mining is concerned. The investments in the mining sector should be in-line with local and national development policies.



The mining companies are the largest private employers in Sierra Leone. Hence, they should be at the forefront in providing training facilities for local people, contributing to the skills and capabilities of the national population. The time, is right for a comprehensive review of the training and development of engineers and allied professionals in light of the intensification of mining activities in Sierra Leone. The failure or inability to embark on such a strategy will be a missed opportunity. The mining companies could offer training for all levels of technical and managerial development in Sierra Leone.

3. Sustainable Procurement

3.1 Mining Concessions

The mining leases reviewed have varying levels of concessions with some common similarities, e.g. income tax concessions vary from company to company. Some companies have negotiated gradient scales which increase with time and with the price of commodities in the international market, whilst others have agreed fixed rates for the first 10 years. Another area of concession includes duty free import of machinery required to perform operations.

Mining leases obligate the companies to give preference to services, products and materials owned and made in Sierra Leone provided they are of comparable quality, delivery schedule, price and subject to technical acceptability and availability.

Mining companies that meet and exceed the government's policies on sustainability are rewarded with fiscal or other relevant incentives whilst those that do not comply with policies have their incentives withdrawn and/or penalised.

The government is re-negotiating mining concessions to ensure they are relevant and meet the needs of the country. Mining companies should not operate as enclaves and must have meaningful Corporate Social Responsibility (CRS) policies which offer local and national benefits. Within six months of signing a lease agreement, the mining companies are obliged to submit comprehensive Master Plans that will address issues of reclamation and rehabilitation of mined out areas. The Master Plans should aid development of communities in and around areas where minerals are mined.

Examples of locations where mining has helped develop new communities are found in South Africa, Wales, Australia, Brazil, Chile etc. In these countries, sustainable communities have developed around the mines which service the needs of the mines, workers and their families.

One of fiscal incentives offered to mining companies is to reclaim up to 100% reduction on income for expenditures incurred in respect of environmental, social impact mitigations, education and/or training, scholarships, donations to worthy causes. This incentive if

managed well could fund the sustainable legacy of the mining operations.

3.2 Compliance Monitoring

The mining companies under the Environmental Protection Agency (EPA) Act, 2008 as amended in 2010 have submitted Environmental Impact Assessment (EIA) plans and issued EIA Licence prior to commencing their operations. Licences are renewed annually or at a term determined by EPA and subject to the terms and conditions being met. Environmental monitoring and auditing of project activities are undertaken to ensure that the terms and conditions of the EIA License are met in accordance with the Act.

An EIA obligation is for the companies to comply with all the provisions outlined in the final Project Environmental Management Plan and any other additional provision(s) prescribed by the Agency within the period of certification.

For EIAs to work in the mining industry, effective strategic and operational environmental and urban planning policies and regulations need to be put in place and monitored closely.

The Director of Mines and EPA have full powers to observe and monitor all aspects of the operations at all mines and can make unannounced visits.

Local communities should be empowered to establish frameworks for assessing and monitoring the environmental impact, and supported by independent experts to ensure sustainability is achieved.

3.3 Skills and Technology Transfer

One of the objectives of the Sierra Leone Local Content Policy is to “develop human and institutional capacity of Sierra Leoneans through training and transfer of knowledge and technology from foreign firms to Sierra Leoneans” to improve and develop the quality of the nation's workforce.

To adhere to the policy, the mining companies are required to submit an Employment and Training Plan to the Ministry of Labour and Social Welfare. The plan should have breakdown of skills required, anticipated

shortages within the local workforce, training required to meet business needs and cost of training to implement the plan. Additionally, the plan should contain details about the timeframe and phases of the project to allow the local workforce to mobilise.

In order to strengthen the nation's technical workforce, the Government in parallel with mining companies' fulfilling their obligations should rehabilitate technical institutions to provide training to meet current skills needs. Some of these institutions should be based near mining sites to give students real work experience. This has successfully been demonstrated in Ghana where the University of Mines and Technology is situated in Tarkwa an area noted for gold and manganese mining.

Mining companies have the potential to provide training on the job, internship and apprenticeship to enable knowledge and technological transfer. The companies should help the government to develop technical institutions and create centres of excellence that secures Sierra Leone's position as a regional leader in value added mining processes. For example, the government should explore the opportunity for processing iron ore to steel for commercial export thus creating value adding industries as well as increasing market value.

The national education system does not meet the demand for skilled artisans and technicians. The current education system (6-3-3-4) should be reviewed to ensure it is fit for purpose. The curriculum of technical institutions should be focused on the skills required by the mining sector and monitored regularly to ensure standards are maintained.

3.4 Good Practice Examples

London Mining's Thofeyim River Terminal is adjacent to the village of Thofeyim, which was affected by noise and dust during construction. Following consultation, the village was relocated to a new site within footprint of the existing village. Hence, there was minimum disruption to villagers' livelihood.

New homes matching old household requirements were built using local contractors to a higher standard. A mosque and market/court barray were built as the agreed social infrastructures at the new site. A further enhancement to this agreement would have

been the construction of a health centre and a solar powered drinking water well.

African Minerals has established two development funds; one for community development and the other for environmental and social protection and impact mitigation. Each fund will receive an annual sum equivalent to 0.1% of African Mineral's gross annual sales.

To conclude, the discovery of minerals will provide the people of Sierra Leone with additional resources needed to make the country middle-income in 25 years as recommended at the Conference on Development and Transformation in 2011.

4. Sustainable Development and the Environment

4.1 Overview

For those concerned about the environment and making the case for Sustainable Development in Sierra Leone, reversing or mitigating the negative impacts of human activities on the ecology and eco system should be the primary concern and objective. The requirement for major industries responsible for the majority of bio-diversity loss through mining to provide EIA for their activities is welcoming.

The requirement is that EIA should include the identification and assessment of impacts, consultation with local communities and major stakeholders, disclosing predicted adverse impacts and providing proposals for mitigating and monitoring these impacts prior to the commencement of the intended activities. EIAs are very effective when implemented and monitored properly, and are regarded in some quarters as the most widely adopted environmental requirements by both individual countries and international organizations since the Earth Summit.

4.2 Earth's Summit Convention

The Earth summit called upon countries to conserve, sustainably use biological diversity and to develop a renewed effort to deal with the plight of poverty, environmental degradation and biodiversity loss. The Government of Sierra Leone responded to this call by drafting the Biodiversity Strategic Action Plan 2003, followed EPA (2008) as amended (2010).

4.3 EIAs and Environmental Social Health Impact Assessment (ESHIA)

Whilst the Biodiversity Strategic Action Plan identified the problems and recommended ways to deal with the problem, the Acts provided the instruments for the administration, monitoring and implementation of environmental sustainability and the submission of EIA for certain projects.

A typical ESHIA should include amongst other things a 'Baseline Study' giving a description of the project, structures, utilities and infrastructure with site description and location. Existing and adjacent site uses and features are also useful information with all phasing, ecology, water courses, landscape, transportation and air quality. The local community make-up together with their

cultural heritage, socio-economic effects, noise and vibration, land and contamination and all cumulative effects is necessary to be collated and presented as part of the ESHIA.

Environmental degradation as a result of mining activities has been on-going in Sierra Leone for decades and has escalated recently with new investments from multi-national companies.

The development of EIAs and ESHIA should therefore form the cornerstone of all mining activities to mitigate the adverse impact of mining operations on the environment and the surrounding communities. The industry normally carries out assessments of the physical, biological and socio-cultural and socio-economic environments with pre-field, field studies and surveys. This is to ensure all potential impacts are accounted for and mitigation strategies put in place, together with development of local communities.

The training of engineers and policy makers should include the cause and effects of various mining activities on the country's bio-diversity. Training should increase awareness and encourage stakeholders to take ownership for managing the environment.

4.4 Local Awareness of Natural Resources

Some stakeholders believe that there is a lack of awareness amongst local communities of the value of the existing natural resources and the need to protect them for a sustainable future. It can also be argued that due to limited finances and environmental consciousness, under developed countries are not able to embrace or implement sustainable development.

It is anticipated that with the increasing investment in mining, Sierra Leone will be able to fully address the environmental needs and contribute towards its sustainable development and communities. This is necessary to deal with the resultant negative impacts of deforestation and land degradation, two of the main areas affecting the country's eco-systems. There is therefore an urgent need for coordinated strategic mining, urban planning and development policies and restricting development activities on the country's green belt.

5 Conclusions and Recommendations

5.1 Conclusions

Sierra Leone is currently in a good position to realise strong economic growth from its wealth in mineral resources. However, it is of high priority that investment in the training and development of local engineers, technicians and artisans is required for sustained growth and national development. Awareness of the impact of mining operations on the environment and ecology should be raised at local and national levels.

The mining companies have the capacity and potential to support the government in providing the required training and development. Legislation is in place to facilitate such arrangements through fiscal incentives.

RoTAP has identified the following as some of the key areas of focus relating to sustainability. These include:

- full and comprehensive involvement of stakeholders at local, national and international levels
- developing concessions based on the long term needs and requirements of Sierra Leone
- taking into consideration the impact on the environment, ecology and social impacts.

5.2 Recommendations

1. The SLIE through its membership should champion the training and awareness of sustainability in the mining sector.
2. The Government should develop a national mining strategy which captures the needs and requirements of the local communities.
3. The mining companies should support the Government in improving the training, skills, knowledge and experience of engineers and technicians.
4. Future mining concessions should explore arrangements that empower local communities and give them a direct stake in the success of the mines

5. SLIE and the University of Sierra Leone should undertake a comprehensive review of the skill requirements and strategies required by the educational institutions to bridge the gap.
6. The Government to consider locating technical institutions near or around major mining sites to give students opportunities for practical experience.

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