

# Assessing the Challenges to Sustainable Mining: A Supply Chain Perspective (A Case of Li Tong Mining Company in Ghana)

Meshach Awuah- Gyawu<sup>1</sup> Samuel Brako<sup>2</sup> Emelia Darko Adzimah<sup>3</sup>

1.School of Business Management, Department of Procurement and Supply Chain Management , Christ Apostolic University College, P. O Box 15113, Kumasi-Ghana

2.Faculty of Business and Management Studies, Department of Procurement and Supply Chain Management, Takoradi Polytechnic, P. O. Box 256, Takoradi- Ghana

3.Faculty of Business and Management Studies, Department of Procurement and Supply Chain Management, Kumasi Polytechnic, P. O Box 854, Kumasi – Ghana

## Abstract

The mining industry contributes significantly to the economic growth of the country however frequent occurrences of collapsed pits, less regard for the disposal of waste into river bodies, poor service conditions to staff of small- scale mining companies and poor corporate social responsibility to mining communities have raised a lot of international concerns. These challenges can be highly minimized when the mining industry shifts from unsustainable patterns of operations. The high cost of sustainable operations and many other challenges are key de-motivational challenges to the adoption of sustainable practices. The study revealed that management and staff of the industry have little knowledge in sustainable mining practices whilst others perceive a low senior management support. The researchers found a positive effect of the challenges on their inability to practice sustainability and recommend a periodic rigorous training for all staff and management of all small scale mining companies and also recommend that the Minerals and Mining Act and the Environmental Protection Agency (EPA) Act are implemented to the later.

**Keywords:** Sustainable development, Mining, Supply Chain Management, Operations Management, Environmental Management

## 1. Introduction and Background.

A study conducted by The Ghana Chamber of Mines (2013) indicates that the mining industry in one of the most lucrative industries in Ghana today. Ghana benefits from the Industry because many minerals abound within the country; chiefly among them are Gold, Manganese, Bauxite and Diamond.

In the past few years, there has been an increasing demand for these minerals by developing countries such as Ghana who are endowed with many of such rich resources. Non - renewable natural resource wealth is seen as an opportunity to obtain economic benefits that can be transformed into increased wellbeing for citizens. However, mining often involves a high environmental impact and the risk of causing, or exacerbating social problems and conflicts in mining areas is significant. According to Liebenthal et. al., (2005) mining could be an opportunity to overcome problems like poverty and inequality but on the contrary it could also constitute a 'resource curse' bringing negative impacts on growth and development of resource rich countries with substantial negative environmental and social impacts. It is only through sustainable development initiatives these challenges and risks can be curtailed whilst ensuring that wealth creation can be long lasting for the benefit of future generations too. The mining industry can practice sustainability by promoting sustainable procurement practices whilst ensuring that all stakeholders in the mining supply chain play their roles to enhance monitoring and control of mining operations in the country.

### 1.1 Statement of the problem

At a United Nations World Summit on Sustainable Development in Johannesburg in 2002, all governments were called upon to shift from unsustainable patterns of consumption and production (United Nations, 2002).

According to the United Nations (2002) report the concept has become necessary because countries such as Ghana and other African countries are faced with worsening climatic conditions, poverty, deforestation and other environmental degradations which are mainly the result of inappropriate production and consumption practices. The mining sector seems to be the worst offenders whose activities sometimes negatively affect the society and the environment. Their activities lead to de-forestation, diversion of river bodies and abandoning of large pits which pose a lot of threat to the environment and the society. As at today mercury which is very toxic to health and safety continue to be used by some mining companies to refine gold.

In January, 2014, 17 people died from a collapsed pit; in July, 2014 a similar incident claimed one life whilst in September, 2014, 16 lives were also lost in similar incidence (<http://edition.alaradioonline.com>, accessed July 3, 2015). Many miners blame their inability to practice sustainability in their operations to many

challenges they face in their quest to operate sustainably. The achievement of this concept will need the continuous demand, motivation, monitoring, regulation and involvement of all the supply chain partners of the industry.

A lot of economic, social and environmental benefits can however be realized by the mining community, the society and the nation at large when the challenges that discourage the promotion of sustainable programs in the mining industry are well dealt with. It is for this reason this research is being conducted to assess the challenges associated to sustainable mining in the small- scale mining industry in Ghana.

### *1.2 Research Questions*

The research questions for this study are as follows:

1. What sustainable mining practices are adopted at Li Tong Mining Company Limited?
2. What is the purpose for practicing sustainable mining at Li Tong Mining Company Limited?
3. What challenges are associated to the practice of sustainable mining at Li Tong Mining Company Limited?

### *1.3 Research Objective*

1. To identify sustainable mining practices at Li Tong Mining Company Limited.
2. To identify the purpose for practicing sustainable mining at Li Tong Mining Company Limited.
3. To assess the challenges associated to the practice of sustainable mining at Li Tong Mining Company Limited.

### *1.4 Significance of the Study*

This research will have an immense contribution to the existing knowledge in the area of study. This will be achieved by:

1. Stressing on the need to promote sustainable mining in Ghana.
2. Helping the government of Ghana to identify the challenges associated to the practice of sustainable mining so that proactive steps can be taken.
3. Serving as a reference point for future researchers to identify ways of dealing with the challenges to the practice of sustainable mining so that it will be well promoted and supported by other industries in the country.

### *1.5 Scope of the Study*

The study is specifically delimited to only one mining company, Li Tong Mining Company located at Manso in the Ashanti Region of Ghana. Only selected questions that helped the researchers to assess the challenges to sustainable procurement practices at Li Tong Mining company limited were asked. Questionnaire was administered on only staff and management of Li Tong mining company limited.

### *1.6 Limitation of the Study*

The study had the following limitations:

1. The frequent power outages in the country was a great constraint to the researchers.
2. The time required for the research was woefully inadequate and required the researchers to overwork.
3. The cost of gathering information from respondents was very high but the researchers was able to solicit enough funds for the research.

## **2. Review of Related Literature**

This chapter presents a literature review for the research. Relevant literature on the background of sustainable procurement and the challenges to sustainable procurement are presented in this chapter.

### *2.1 Overview of Mining in Ghana*

The mining industry of Ghana accounts for 5% of the country's GDP and minerals make up 37% of total exports, of which gold contributes over 90% of the total mineral exports. Thus, the main focus of Ghana's mining and minerals development industry remains focused on gold (<http://www.mbendi.com/indy/ming/af/gh/p0005.htm#5>, accessed July 2015). Most of the miners in Ghana are however small scale miners.

The concept of small- scale mining is difficult to have a general conceptualization and definition because what constitutes a small- scale mine in country X (say the United States of America) may look quite large in country Y (say Ghana, Burkina Faso or Tanzania). According to the Mineral and Mining Act, 2006 (Act 703) of Ghana small -scale mining is defined to include entities that are owned by co-operatives and individuals. It is also considered as a low capital-intensive form of mining in the country (Chatterjee, 1993). It is a form of mining with little or no use of mechanization and therefore makes it labour intensive. According to Barber ( 1980), most small- scale mines are described as surface and or shallow underground mines. The depth of small-scale mining largely depends on the depth of the deposit, which is a natural attribute not subject to human

manipulation.

As a result of the large numbers of small- scale mining companies operating in the country, supervision of their activities are somehow difficult by the EPA and the Mineral’s Commission which accounts for their ability to veer from the laws on mining and environmental protection and human rights.

Sustainable mining is a key to ensuring a sustainable wealth creation. It has as its main objectives of promoting sustainable development of human societies, communities, and the environment. According to Frederick A. (2010), no mine will continue to produce indefinitely; but indigenous societies and undisturbed ecosystems can prevail for long periods of time and can continue to improve over time. Promoting sustainability in mining operations is a key to ensuring a sustainable society and a green environment.

### 2.2 The Concept of Sustainability

The term ‘sustainable development’ was first defined in the 1980s in the Brundtland report (Hunter, 1997; Mowforth and Munt, 2008). So far, previous researches have shown that there is no agreement whether the main responsibility for sustainable development should lie with the public or the private sector (Bramwell and Alletorp, 20001; Forsyth, 1995). Nevertheless, the communication between public and private sector is often ineffective (Berry and Ladkin, 1997; Dewhurst and Thomas, 2003; Horobin and Long, 1996). The main motive for the implementation of sustainable business practices is based on the business managers’ or the corporations’ philosophy and closely linked to the possibility of saving costs (Landrum and Edwardsm 2009; Bohdanowicz et al., 2004; Hitchcock and Willard, 2009); however, other achievements can be made that can have an indirect effect on sales and profitability such as an enhancement of corporate image.

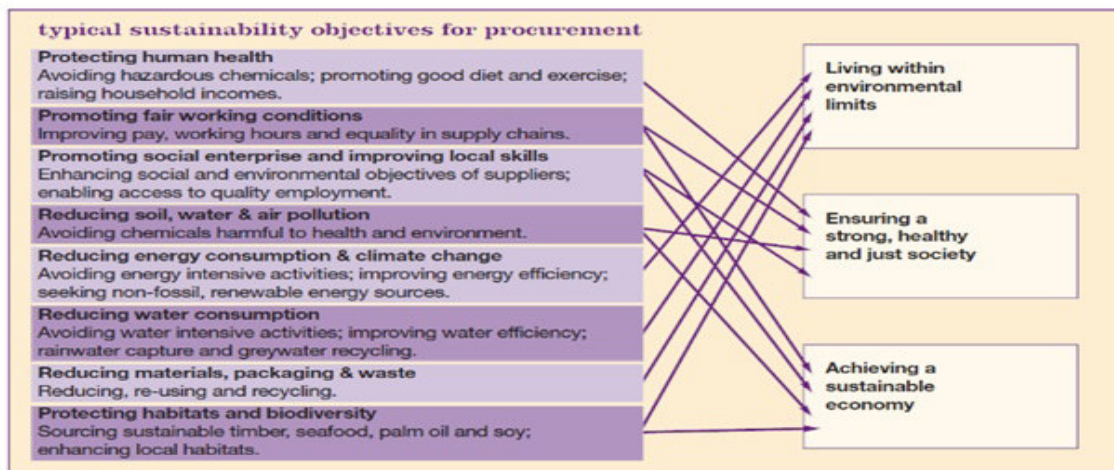
Some researchers are of the view that since 1987, the use of the term “sustainability” has been actively debated due to the vagueness of its original definition (Dahlsrud, 2008). World Commission on Environment and Development (1987) however define sustainability as: “meeting the needs of the present generation without compromising on the ability of future generations to meet their own needs. Sustainability, as a concept describes the social, economic and environmental responsibility for the present and future generations. It has been a frequently discussed term over the past two decades. The idea is muddled by related concepts such as Corporate Responsibility and Corporate Social Responsibility that all draw to various degrees on some aspect of enhancing sustainability within the firm (Allyson L. C., 2008).

### 2.3 Objectives of practicing sustainable development

In recent times, there have been growing concerns by various governments, organizations and pressure groups to promote sustainability as a result of the benefits that can be accrued by the economy, the environment and the society at large if the objectives of sustainability are well understood and implemented appropriately. Sustainability is a management process used to secure the acquisition of goods (products), services and creation of wealth in a way that ensures that there is the least impact on society and the environment. (www.cannybuyer.com/guidebook, accessed May 2015).

Key objectives of sustainable procurement is to protect human health; promote fair working conditions; promote social enterprises and improve local skills; reduce soil, water and air pollution, reduce resource consumption; reduce material packaging and waste; and to protect habitats and promote biodiversity (forum for the future,2007).

Further objectives of practicing sustainable procurement is illustrated below:



Source: Buying a Better World: Sustainable Public Procurement ( Forum for the Future, 2007)

## 2.4 *Challenges of Sustainable development*

### 2.4.1 Organizational Internal challenges

Organizational internal challenges are key to the promotion of sustainable development practices. Such key challenges include:

#### 2.4.1.1 Lack of technical Know- how

Sustainability is quite a new concept and its implementation will need experts so that its full benefits will be realized. Africa and Ghana in particular lack sufficient experts in this field. The cost- benefit trade-off of sustainability must be well calculated in order to provide a cost effective sustainable products and services to the consumer with little or no negative impact on the economy, environment and the society. According to the Sustainable Procurement Taskforce (2006), without sustainability training, the motivation of procurers reduces and delivery of sustainable outcomes suffers.

#### 2.4.1.2 Internal Stakeholder Resistance

Stakeholders are those who can affect or are affected by the achievement of the company's objectives (Freeman, 1984). An organization's stakeholders may be either internal or external. Internal stakeholders include the owner, manager and employees of the organization whilst suppliers, customers, the society, the government, shareholders and creditors are best grouped under external stakeholders of an organization. According to Amy Robinson (2008), a successful sustainable procurement project requires greater stakeholder collaboration. If stakeholders are unable to perceive the benefits of sustainability, it becomes difficult for them to buy- into sustainable programs and they turn to create a massive resistance. The resultant effect is that implementers of sustainable projects become de-motivated and eventually stop implementation.

### 2.4.2 Political and Legal Challenges

To ensure that suppliers or producers of products and services practice sustainability, it is of much importance that the government takes the lead in enacting laws to regulate the activities of producers of products and services so that the ordinary consumer will be safeguarded. The recent flood that occurred and claimed about 152 lives in Ghana which was attributed to the environmental unsustainability of some suppliers of fuel who built service stations in waterways ([www.dailyguideghana.com](http://www.dailyguideghana.com), accessed June, 2015). The mining communities have seen worse environmental and social effects from mining companies who are not committed to environmental sustainability. These companies destroy large acres of farmlands, trees, pollute and divert river paths, create and leave large pits which endanger lives and fail to reclaim lands without being punished because of weak laws and weak institutions to enforce laws. This results in many deaths and serious poverty in most mining communities.

The public procurement act (2003) which serves as a guideline for procurement in Ghana throws very little light on sustainable procurement. The result of poor government leadership leads to poor awareness of sustainability to producers or suppliers of goods and services in the nation.

### 2.4.3 Economic Challenges

#### 2.4.3.1 Cost of implementing sustainability

There are many barriers to sustainable project implementation however according to the findings of a survey conducted in about 800 businesses in New Zealand, management time and cost stand out as the major challenges (Lawrence et al., 2006). The cost of training, doing market research to source for sustainable suppliers of inputs, cost of purchasing machinery which use less of energy or are less dependent on non- renewable energy, cost of disposing waste sustainably, etc. are all major concerns for management of businesses.

#### 2.4.3.2 Greenwash and Absence of Eco-labels

Greenwash is the practice of making false, misleading and/or deceptive claims about the environmental practices of a company or the environmental attributes of its goods and/ or services (Sustainable Procurement Guide, 2013). After perceiving the benefits of sustainability, management of organizations who recognize the barriers associated with sustainable production turn to use such bad device to create a false perception of their products and services to their purchasers and the public at large. Businesses who engage in this act are able to sell their products at a very low price to obtain a competitive advantage over businesses practicing sustainability. This results in the demotivation of businesses involved in actual sustainable production or operations.

Greenwash also introduces confusion in the minds of purchasers as to which products are sustainable or not. Purchasers who are unable to realize the benefits of buying sustainable products become disappointed as they are unable to obtain value for their investment.

Eco- labels are designs provided by organizations who provide certification to products and services. They are meant to protect the purchaser and the consumer ([www.ecolabelindex.com/](http://www.ecolabelindex.com/), accessed February, 2015), however many developing countries do not have enough of such organizations who provide certification and eco- labels to suppliers of products and services. This makes the control of less quality products flooding the market very difficult for the few certification agencies to the disadvantage of the purchaser and the consumer.

#### 2.4.3.3 Complexity of comparing cost and value of products

The quality of a product or service is perceptual to many researchers and purchasers irrespective of the level of details of specifications provided. Sörqvist (2001) agrees with the level of complexity in measuring the quality and cost tradeoff of services and products. This problem poses a lot of challenges to consumers who seek to achieve value for money which may not be realized as a result of fake or poor quality products flooding the market. Businesses, purchasers and consumers are therefore unable to know which products will exactly meet their satisfaction with respect to the level of investment. Campanella (1999) suggests that the best way to make quality more tangible is through quality costing.

#### 2.4.4 Social Challenges

##### 2.4.4.1 Habit and the difficulty in changing human behaviour

Irresponsible disposal of waste by consumers and some businesses is a habit difficult to deal with. Many organizations and consumers are reluctant to separate their waste before disposal. Some poisonous waste find their way into river bodies which pose a lot of threat to health and safety. Many consumers in Africa fail to check expiry dates of products before use whilst others feel they will be sidelined by their society should they bring such companies and individual consumers who do not practice sustainability to the lime light for them to be punished.

##### 2.4.4.2 Lack of Awareness of the Impact of Sustainable Procurement

Many suppliers and consumers have little or no knowledge of the impact of sustainable procurement. This accounts for the lack of support for sustainable projects and the less patronage of sustainable products by consumers. According to findings from a research conducted by Marita R. (2011) awareness and demand for sustainable business practices are perceived as low. This is a key contributor to the reluctance of consumers and even management of some organizations to support sustainable projects and products.

##### 2.4.4.3 Poverty

Many consumers are unable to patronize sustainable products as a result of their high cost. Poverty causes suppliers and workers to accept bad terms and conditions that do not show fair trade. Suppliers are willing to accept wages that are not fair compensation for their products or services and others who have poor hygienic working conditions still continue to give services for fear of being laid off. In some developing countries such as Ghana, many mining companies and cocoa farmers use child labour which is a big challenge to the sustainability of the society. Such children are deprived of quality education, health and safety which affect their productivity in the future.

### 3. Methodology

This chapter presents the methodology used for the study. It presents the tools that were used to describe and analyze data collected for the purpose of this research. It explains the research design, sources of data collected for the study, the population of the study, sample and sampling procedures and the methods used for data analysis.

#### 3.1 *Research Design*

In this research, a multi-method approach was adopted. The study adopted both quantitative and qualitative approach. Thus, both qualitative and quantitative data were collected to answer the research questions. The interview and questionnaire had a very simple structure to enable the researchers to cover all research questions. An personal observation by the researchers enabled him to better understand the opinions of the respondents.

#### 3.2 *Population*

A population is a group of individuals, persons, objects, or units from which samples are taken for measurement (Saunders et al., 2009). The population that is being studied is also called the target population (Mann, 1995). The target population for the study consists of staff and management of Li Tong mining company limited operating at Manso in the Ashanti Region of Ghana. Questionnaires were successfully administered and the interviews were successfully conducted.

#### 3.3 *Sample and Sampling Procedure*

For the purpose of this study, a purposive sampling was used in the selection of the mining company. A simple random technique was adopted in the selection of the employees of the company whilst all staff at the management level were selected for the study. In all 40 staff of the company were selected of which 10 of the staff worked at the managerial level which included the an administrator, a secretary, an accountant, 4 supervisors and 2 geologists.

#### 3.4 *Data Collection Instruments*

In this study a structured questionnaire was administered which enabled the researchers to address the objectives

of the study. Both primary and secondary sources of data are used.

The primary sources of data are obtained through interviews and questionnaires and secondary sources of data are obtained from published and unpublished articles and journals, text books and the internet. A 'face to face' discussions and the administration of questionnaires enabled the researchers to easily compare and contrast all the responses of the respondents. The interview and questionnaire had a very simple structure to enable the researchers to cover all research questions.

Most of the questions were measured using a Likert-type scale. Management of the company were briefly educated on the concept of sustainable procurement before the questionnaire was administered and interviews conducted.

### 3.5 Data Analysis

Most of the questions were of the closed-ended type although few were of the open ended type of questions. The open-ended questions solicited free responses from the respondents, and the closed-ended questions allowed respondents to choose one response out of several as a result of the low literacy levels of most of the respondents. The questionnaire consisted of both categorical and scale type question items. Likert-scale question items were used to gather the information on the perceptions of the respondents. The questionnaire was pre-tested using a selected group of respondents from the target population to ensure reliability and validity. The secondary data used for the study were sourced from The Minerals and Mining Act (2006), the Environmental Protection Agency Act (1994) and the Public Procurement Act (2003). These contributed immensely to the success of the study. All data were coded and analysis was carried out using the Statistical Package for Social Sciences (SPSS) and Microsoft Excel to measure the means and standard deviations of perceptions obtained. Notwithstanding, the challenges faced during the data collection, it did not in any way affect the reliability, validity, credibility, and accuracy of the result.

Data was presented in tables and analysis was mainly done using descriptive analysis where issues of similarity and dissimilarities of responses were compared and statistical tools such as percentages, the mean and standard deviation enabled the researchers to have a good comparative analysis. The number of respondents to a question was represented by 'N' whilst S.P was sometimes used to represent sustainable procurement. This was to help the researchers to make an easy analysis.

## 4. Results and Discussion

### 4.1 Socio Demographic Characteristics of the Respondent

This section of the study elaborates the major demographic characteristics of the surveyed respondents. The section discusses the gender, age, educational background, working experience with the retail firm and position in the retail firm. The result is presented in Table 1.

From table 1, it is observed that majority of the respondents are males. Some respondents explained during an interview that the mining work involves a lot of strength. It is also observed that most of the respondents were employed as 'washers', thus they are responsible for washing the dug soil with running water which involves a lot of hard work. Unfortunately the table reveals that most of the workers were at the school – going age ( below the age of 30 representing 75.00 % ). Whilst 32.5 % have no formal education, 42.5 % percentage had either basic or secondary education.

### 4.2 Identification of Sustainable Procurement Practices at Li Tong mining company limited

The table below shows the level at which some selected sustainable procurement practices are adopted by Li Tong mining company limited as perceived by respondents. The respondents to this question include both employees and management.

It can be observed from table 2 that the sustainable procurement practices perceived to be adopted by most of the respondents from Li Tong mining company limited include: the provision of fair wages, practice of diversity in their employment policies and embarking on reclamation of destroyed lands with mean scores of 3.2, 3.17, 3.13 and standard deviations of 0.41, 0.38, 0.35 respectively. These mean score values depicts an agreement of the fact that those practices are adopted by the company. A minimum of less 1 of standard deviation values show a less divergence of the views of respondents.

Most of the respondents however almost disagree or are unaware of the Provision of social amenities, provision of safe working environment, recycling of waste water and the adoption of competitive tendering in their acquisition of machines, parts, materials, etc for their operations.

An interview revealed that the only social amenity provided to the community is a public place of convenience which all workers of the company also depend on the facility.

### 4.3 The Purpose for Practicing Sustainable Procurement at Li Tong mining company limited

A personal observation by the researchers showed that there was an uncontrollable noise which could drive

many animals, birds, etc further away from their habitats. Observation, also showed that a river path was diverted and made very dirty which indicated a lack of much care to the objective of reducing pollution to the environment. Lastly, the health consideration of the indigenes of the community seemed not to be much considered as an observation by the researchers quite showed that some of their water bodies were seriously polluted as a result of the activities of the company. The perception of the management of the company also seem to portray that to a high extent, their practice of sustainability is triggered by the agitations of employees of the company and the community in which they operate. This is clearly shown in table 3.

#### *4.4 The Challenges Associated to the Adoption of Sustainable Procurement Practices as Perceived by Management of Li Tong mining company limited*

Table 4 shows the challenges facing the management of Li Tong mining company limited in their quest to adopt sustainable procurement practices. All respondents to this question played a managerial role in the company. The Table reveals that lack of senior management support and the lack of much awareness of good sustainable procurement practices were considered as the major challenges facing the adoption of sustainable procurement practices with mean scores of : 3.20, 2.9 and population standard deviation values of 0.42, 0.88 respectively. The table shows that the community is very much interested in the corporate sustainable procurement policies.

### **5. Summary, Conclusions and Recommendations**

#### *5.1 Summary*

The study sought to assess the challenges to sustainable procurement. The study aims at examining the extent at which sustainable procurement is practiced at Li Tong mining company limited. It also sought to identify the purpose for which sustainable procurement is practiced. The challenges associated to the practice of sustainable procurement are then identified.

#### *5.2 Key Findings*

The study revealed that a high percentage of staff were of the school going age of which 32.5% of the 40 respondents were below the age of 20 years.

Again, most of the respondents from table 2 indicated that the company provides fair wages, practice diversity in their employment of staff and embark on reclamation of destroyed lands as part of their sustainable procurement practices. However, they were of the view that little has been done in regard to the provision of social amenities to the community.

The study revealed that most of the staff at the managerial level are unaware of good sustainable procurement practices. A mean score of 2.9 and a standard deviation of 0.88 from table 3 clearly indicates that to a high extent, management believes this assertion. Management stated some of the following to be their objectives of adopting sustainable procurement practices:

1. To avoid conflict between their employees, the community and management. They explained that labour agitations slow down work which is high cost to the organization.
2. To reduce soil, water and air pollution
3. To protect the ecology

Management were of the view that Lack of much awareness of good sustainable procurement practices is one of their main challenges. They indicated that the company's head office is in Accra and felt that management showed little concern for the promotion of sustainable procurement practices in the company except when their inability to perform such practices could generate conflict between them and the community.

Finally, management indicated that the results of the challenges they face in their quest to practice sustainable procurement is their inability to satisfy members of the community, difficulties in reducing the level of pollution to the environment and an inability to provide fair and hygienic working conditions to their cherished staff.

#### *5.3 Conclusions*

The researchers concluded that the inability of staff and management of Li Tong Mining Company operating in Ghana to practice sustainable procurement is as a result of certain challenges faced by the organization. It is concluded that management and staff of mining companies operating in Ghana have little knowledge in the Mineral and Mining Act (2006), the Environmental Protection Agency Act (1994) and the Public Procurement Act (2003) and some of the companies they intentionally disregard these laws. It can also be concluded that the health and safety of the indigenes of mining communities is not secured as a result of little attention mining companies pay to health and safety of the community.

#### *5.4 Recommendations*

There should be a periodic rigorous training for all staff and management of all mining companies operating in

Ghana irrespective of whether they operate in a large or small scale.

There is the need for the laws in the Mineral and Mining Act and the EPA Act to be implemented to the later and enough security and control systems should be well allocated to implement these laws in mining communities but with high level of diplomacy because of the high degree of illiteracy by most members of mining communities.

I also recommend that the chiefs of the communities who are the custodians of the lands ensure that the health and safety of the people in their communities are assured by all miners before they start their operations.

Lastly, I recommend that chiefs are allowed to sign a memorandum of understanding with mining companies to execute certain corporate social responsibility programs before a final license is issued to them by the District Assemblies and the Mineral's Commission.

### 5.5 *Suggestion for Further Research*

This study sought to assess the challenges associated to the adoption of sustainable procurement practices in the small scale mining industry in Ghana. The study was only limited to the small- scale mining industry and specifically only one of the companies was selected from one geographical area. I therefore recommend further research to include other mining companies and other organizations in other industries operating in different geographical areas.

I also recommend further studies to assess the level of compliance to the minerals and mining Act 2006 by small scale mining companies operating in Ghana.

### **References**

- DEFRA, (2006). *Procuring The Future- The sustainable procurement task force National action Plan*, DEFRA, London.
- Department for Environment, Food and Rural Affairs (2011). *Sustainable Procurement. Policy Statement*. Retrieved March 8, 2015 from <http://www.defra.gov.uk>.
- EPA (1994). *Act 490*.
- <http://edition.a1radioonline.com> (2014). *3 People Perished In a Mining Pit at Gbane*. Retrieved July 5, 2015.
- Liebenthal, A., Michelitsch, R., and Tarazona. (2005). *Extractive Industries and Sustainable Development An Evaluation of World Bank Group Experience*. Washington D.C.: World Bank. [Online]. [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2005/06/21/000090341\\_20050621121829/Rendered/PDF/32671.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2005/06/21/000090341_20050621121829/Rendered/PDF/32671.pdf) (Accessed 10 May 2012)
- Minerals and Mining Act (2006). *Act 703*.
- United Nations (2008). *Public Procurement as a tool for promoting more Sustainable Consumption and Production patterns*. Retrieved June 5, 2015 from <http://esa.un.org>.
- United Nations (2010). *Annual Statistical Report on United Nations Procurement*. Retrieved June 2, 2015 from [https://www.ungm.org/Areas/Public/Downloads/ASR\\_2014.pdf](https://www.ungm.org/Areas/Public/Downloads/ASR_2014.pdf).
- United Nations (2002). *Report of the World Summit on Sustainable Development*, ( p. 11)
- The Ghana Chamber of Mines (2013). *Ghana Mining Summit 2013*. Retrieved July 12, 2015 from <http://ghanachamberofmines.org/en/posts/ghana-mining-summit-2013-1.php?p=15>



**Notes**

**Table 1: Socio Demographic Information (N=40)**

Socio demographics	Frequency	Percentage
<b>Gender</b>		
Male	26	65.0
Female	14	35.0
<b>Age of respondent</b>		
Below 20 years	13	32.50
21-30 years	17	42.50
31-40 years	9	22.50
41-50 years	1	2.5
51+ years	0	0.00
<b>Educational background</b>		
No formal schooling	13	32.50
Basic	10	25.00
Secondary	7	17.50
Tertiary	10	25.00
<b>Job Description</b>		
Manager	4	10.00
Supervisor	4	10.00
Machine Operators	4	10.00
Geologists	2	5.00
Washers	26	65.00
<b>Years worked with the retail firm</b>		
1-3 years	25	62.5
4-6 years	15	37.5
7-10 years	0	0
11+ years	0	0

Source: Field Survey, 2015

**Table 2: Sustainable Procurement Practices at Li Tong mining company limited as Perceived by Respondents**

Total number of Respondents (N) = 40

Scale: ( 4= Strongly agree, 3= agree, 2= unaware, 1= disagree)

Sustainable Procurement Practices	Mean	s.d
Provide Social Amenities to the Community	1.90	1.20
Factors diversity in our Employment Policies:	3.13	0.35
Provide Safe working conditions:	1.39	1.23
Frown on Child Labour:	2.93	0.92
Provide fair wages:	3.2	0.41
Embark on reclamation of land:	3.17	0.38
Refrain from the use of Mercury:	2.3	1.15
Ensure a reduced noise Level during Operations:	1.83	1.32
Recycles waste water:	1.33	1.83
Adopts a competitive Tendering procedure in the acquisition of machines, parts, materials, etc for operation:	1.97	1.03
Buys Machines which consume less fuel and produce less noise:	2.9	0.84
Buys products with eco- labels:	2.33	0.76

Key: (s.d=> Standard deviation)

Source: Field Survey, 2015

**Table 3: The Objectives for Practicing Sustainable Procurement (Perception of Management)**

Total Number of Respondents (N)= 10

<b>Objectives</b>	<b>Frequency(f)</b>	<b>Percentage (%)</b>
To avoid conflict between their employees and management	10	25
To avoid conflict between management of the company and the community	15	37.5
To help reduce soil, water and air pollution	9	22.5
To help protect the ecology	6	15

Key: (s.d=> Standard deviation)

Source: Field Survey, 2015

**Table 4: Challenges to the Adoption of Sustainable Procurement Practices**

Total number of Respondents (N) = 10

Scale: ( 4= Strongly Agree, 3= Agree, 2= Unaware, 1= Disagree)

<b>Challenges</b>	<b>Mean</b>	<b>s.d</b>
Lack of much awareness of good sustainable procurement practices	2.9	0.88
High cost of sustainable products and services	2.10	0.74
Conflict between corporate and community social responsibility policies	1.40	0.52
Lack of senior management support	3.20	0.42
Lack of suppliers of sustainable products	2.4	0.52

Key: (s.d=> Standard deviation)

Source: Field Survey, 2015

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

### CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

### MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

### IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

