

## **Environmental Management accounting implementation in Zimbabwe mining sector.**

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**Abstract:** *In this era where climate change is a topical issue globally, environmental management accounting should take precedence in the mining sector. The study adopted United Nations definition for environmental accounting which states that environmental management accounting serves as a mechanism to identify and measure the full spectrum of environmental costs of current production processes and the economic benefits of pollution prevention or cleaner processes, and to integrate these costs and benefits into day-to-day business decision-making. Environmental Accounting has the responsibility of dealing with all the phenomena resulting from the company's environmental influence. The purpose of this study is to evaluate the implementation of environmental management accounting focusing on sustainable development. The study will look at the strategies being adopted by the mining sector in the developing and implementation of environmental management accounting systems. The study seeks to understand and/or explore how environmental management accounting is being implemented by the mining sector. The implementation process will cover the adoption of the process and the disclosure in the financial statements as well as the cost implication which enhances sustainable development to the company and the country. The mining sector is taken as a case study. The study will employ descriptive survey design and an open ended questionnaire will be used to solicit information on the implementation of environmental management accounting. The study findings show that the application of environmental policies that enhance a set of plans of action of the companies, regarding the environment, has revealed advantages for the 'green' companies.*

**Keywords:**

**Environmental Management Accounting (EMA)** *is the management of environmental and economic performance through the development and implementation of appropriate environment-related accounting systems and practices.*

**Mining Sector** *is the act, process, or industry of extracting minerals like coal, ore, gold diamond, etc from the earth.*

**Mining** *is the process or business of extracting ore or minerals from the ground.*

**Sustainable development** *is defined as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.*

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### **I. Background to the Study**

Taking care of the environment has become an enormous preoccupation virtually around the world, and accounting for the environment and related issues are beginning to take on increasing importance. (IFAC, 2005). According to the 2013 National Budget Statement by the ministry of Finance, mining has become the most dynamic sector of the Zimbabwean economy, leading economic recovery since 2009, with an average annualised growth of more than 30%. Strong external demand for primary commodities, particularly of platinum and gold has supported higher production levels. As a result, mineral exports rose by about 23% over the 2009-2011 periods, making mining the leading export sector. By end of 2011, mineral exports accounted for 47% of total exports led by platinum (43%), gold (28%), and diamonds (20%). The anticipated recovery of mineral prices coupled with on-going investment in the sector as well as the resumption of production of nickel and asbestos in 2013 will see growth rebound to 17%.

Environmental Cost Management Accounting is critical in Zimbabwe in the mining sector considering the phenomenal growth being witnessed in the sector over the past few years. Management accounting is intended for internal users and is not bound by the externally imposed rules of financial reporting; it tends to be more subjective and uses both financial and non financial measures thereby providing more detail than financial accounting. The area of Environmental Cost Management is part of the internal control systems of the organisation which are not visible from outsiders or intended for external stakeholders. The mining sector usually does not disclose their environmental management accounting (EMA) activities, which leaves a question whether they are being done or not.

The International Federation of Accountants (IFAC) provided guidelines for EMA against a growing consensus that conventional accounting practices simply do not provide adequate information for environmental management purposes. The field of EMA has been receiving increasing attention in as far as the implementation of EMA systems which encourage sustainable development for the companies specifically in this case the mining sector and the healthy of the lives in the areas in which the companies are operating. The IFAC EMA guidelines are not intended to be standards that IFAC member Bodies are expected to follow or adopt as part of their responsibilities but it is intended to be a guidance document that falls into the middle ground between regulatory requirements, standards and pure information. These guidelines help companies come up with an implementation strategy for their EMA system.

The benefits of Environmental cost management accounting are reported to be much less than the costs. The investment in EMA usually requires a huge capital investment and the returns are almost insignificant and are spread over a long period into the future. In many companies the real environmental costs which can be identified are the fines that the company faces. The costs of building and operating effluent systems are part of environmental costs. The cost to set up and implement the EMA system should be part of environmental costs. These costs are not visible in most financial statements which are produced by the companies in the mining sector, the only visible costs are the costs of fines which are directly related to the environment.

The research seeks to understand how environmental cost management accounting is being implemented. The sector is almost silent in as far as environmental cost management accounting is concerned. The area is attracting a lot of attention world wide and the mining sector is blooming in Zimbabwe and growing more than any other sector in Zimbabwe. EMA is of paramount importance to help in fostering sustainable development in Zimbabwe. Sustainable development ensures that current development meets the needs of the present without compromising the ability of the future generations to meet their own needs. Though some schools of thought are of the opinion that absolute sustainability may not be attained, progress towards its achievement certainly seems to have some merit. A close look at the implementation of EMA in Zimbabwe help to secure and put in place systems that ensure that future activities are not compromised by activities which are being done in the mining sector. The need to check into the possibilities of investments being done by different companies in the mining sector towards the environment has prompted the researcher to look into the modalities being taken to account for environmental benefits. The investments into the future should be set up in commensuration with the benefits being obtained by the mining sector.

Management of environmental costs has become a matter of high priority and intense interest globally especially in this area where climate change being caused by burning fossil fuel is a topical issue. The burning of fossil fuel falls under the mining sector. Management of environmental costs has become a matter of high priority mainly because of environmental regulations which have increased significantly, and even more stringent regulations are expected. The regulatory laws, implemented by the Environmental Management Agencies carry enormous fines or penalties, creating strong incentive for compliance. The compliance is in as far as the regulations are concerned but not to create sustainability, because of the heavy penalties companies are trying by all means to avoid these penalties at the same time creating future problems. Successful treatment of environmental concerns is becoming significant competitive issue because corporate are discovering that meeting sound business objectives and resolving environmental concerns are not mutually exclusive.

Environmental Management Accounting brings about the issue of eco-efficiency. Companies need to know whether they are being eco-efficient or environmentally friendly. Eco-efficiency essentially maintains that organisations can produce more useful goods and services while simultaneously reducing negative environmental impacts, resource consumption and costs (Hansen and Mowen, 2000). The concept of eco-efficiency carries important messages: improving ecological and economic performance can and should be complementary, Improving environmental performance should no longer be viewed as a matter of charity and goodwill but rather as a matter of competitiveness, eco-efficiency is complementary and supportive of sustainable development which is defined as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs. Increase efficiency comes from improving environmental performance. Environmental costs should be reported as a separate classification so managers can assess their impact on firm profitability.

The IFAC guidelines are just a guideline as indicated above there is no implementation manual for day to day running or implementation of EMA. It is important to note that most EMA experiences to date has been in the manufacturing sector. There is need to develop sector specific guidelines not generalised guidelines in future. EMA in the mining sector has been generalised as well and because of the complication in implementation and lack of guidelines in the mining sector most companies in this sector might opt for the easy way out of not implementing environmental cost management systems.

## **II. Statement of the problem**

The implementation of environmental cost management in the Zimbabwe mining sector is not known and has not been openly discussed and hence the impact on the economy (sustainability). This was the problem this study seeks to address.

### **Objectives of the Study**

The study intended to:

- Explore the implementation of environmental cost management accounting in the Zimbabwe mining sector.
- Discuss the significance of tracking and reporting environmental costs.
- Explore the need for EMA in the mining sector.
- Examine if EMA enhances sustainable development.

### **Research Questions**

In this research the research questions could be stated as follows:

- What is environmental management accounting in the mining sector?
- Are environmental costs significant enough to track and report to management?
- How is environmental cost management implemented in the mining sector?
- Should environmental costs be assigned to products and processes as a separate item?
- Does environmental cost management accounting implementation enhances sustainable development?
- Should companies be concerned about environmental costs that they cause but for which they do not have financial responsibility?

## **III. Theoretical Framework**

Environmental management accounting is the management of environmental and economic performance through the development and implementation of appropriate environment-related accounting systems and practices. (IFAC, 2005). The study adopted United Nations definition for environmental accounting which states that environmental management accounting serves as a mechanism to identify and measure the full spectrum of environmental costs of current production processes and the economic benefits of pollution prevention or cleaner processes, and to integrate these costs and benefits into day-to-day business decision-making. Management accounting should be able to measure the environmental costs of current production process and the economic benefits of pollution prevention. If a company in its implementation of EMA is able to measure environmental costs of current production and the economic benefits the company will be addressing the issues of sustainable development. The overall goal and purpose of EMA from the definition adopted from United Nations is to ensure that sustainable development is address in overall achievement of organizational objectives. The integration of these costs into day-to-day business decision making is very crucial for the success of the business. The Environmental Management Accounting implementation encompasses the day to day practices of entering transactions in the books of accounts in order to ensure that every cost which relates to management accounting for decision making purposes has been accurately taken into consideration.

The internal and external stakeholders are showing increasing interest in the environmental performance of organisations, particularly private sector level. Examples of internal stakeholders are employees and examples of external stakeholders are communities affected by pollution and other environmental effects. Environmental pressure is forcing many organisations to look for new, creative and cost effective ways to manage and minimize environmental impacts. Environmental pressure in Zimbabwe comes from regulatory authorities such as Environmental Management Agencies and Zimbabwe Revenue Authority (ZIMRA) with environmental related taxes. World wide there were few environmental regulations in the past to force organisations to better manage and minimize environmental impacts. Pollution clean-up regulations have resulted in increasing liability costs for site remediation and liability related insurance costs. The cost to cater for pollution clean-up and other environmental related costs should be inherent in the EMA system of an organisation to avoid bigger company liability. There are monetary rewards of improved environmental performance, which is being aware of the implication of current production activities and managing the effect to the environment.

Environmental Accounting (EA) involves the assessment and disclosure of environment-related financial information in the context of financial accounting and reporting. EA is the consideration of environment-related physical and monetary information in the broader context of sustainability accounting. EA information helps to assess the health of a particular ecosystem, political entity or even the entire world. The Mining sector falls under natural resources accounting (NRA) of EMA which provides information on the stocks and flows, actual and potential uses and potential value of natural resources such as forestland, clean

water and mineral deposits. EMA has been variously called EA, Environmental Cost Accounting (ECA), Full cost accounting (FCA) or total cost assessment (TCA).

The concept of sustainability requires a recognition that humanity must live together within the limits of our planet's overall resources and carrying capacity. Sustainable development is defined as dealing with economic, environmental and social issues in a way that meets both present and future human needs without compromising the viability of the natural earth systems we depend on. (IFAC,2005). Environmental management accounting covers only economic and environmental components of Environmental Accounting. EMA does not encompass the social components in its definition which is crucial for full achievement of sustainable development. The major thrust for sustainable development is the social aspect which has to be protected for the future generation. The social issues are much silent in the implementation of EMA but the effect of good EMA implementation has a positive impact on the social aspect of sustainable development.

The organisation must collect monetary and non-monetary data on materials use, personnel hours and cost drivers. The Zimbabwe mining sector (Non-manufacturing operations) uses a significant amount of energy, water and other materials to help run their operations, which depending on how those materials are managed, can lead to a significant generation of waste and emissions. Material related environmental impacts can be the generation of waste and emissions, which can affect the health of both humans and natural ecosystems including plants and animals. The final products have potential environmental impacts when they leave the company (physical product and packaging). These potential environmental impacts need to be taken into consideration and be part of environmental cost management system, thee by helping the organisation cost its final products in full.

The extraction of all raw materials has environmental impacts. Extreme impacts on the environment surrounding extraction sites can be noticed in the form of erosion, outright removal of topsoil, vegetation, disruption of wildlife feeding, reproduction and migration habitat. The impact of mining activities on the local human population that depend on the affected ecosystem for food and clean water. Increased depletion of non-renewable or slowly renewable natural resources is a cause of concern which needs to be addressed for purposes of sustainable development.

The table below shows a brief comparison of the environmental dimension of financial and management accounting.

Table 1.1 Organisational level Accounting and reporting.

Organization-level Accounting	Organization-level Environmental Accounting	Associated MANDATORY External Reporting	OTHER External Reporting Links
<p><b>Financial Accounting (FA):</b> An organization's development of standardized financial information for reporting to external parties (e.g., investors, tax authorities, creditors).</p>	<p><b>Environmental Issues in Financial Accounting:</b> The inclusion in financial reports of environment-related information such as earnings and expenses of environment-related investments, environmental liability and other significant expenses related to the organization's environmental performance.</p>	<p>Financial reporting to external parties is regulated by national laws and international standards, which specify how different financial items should be treated. The financial reports issued by organizations increasingly include information related to their environmental and social performance. Some countries require such content in financial reports, while some organizations include such information voluntarily.</p>	<p>In addition, organizations use some of the environment-related information gathered for financial reporting purposes for environmental regulatory reporting, national reporting or voluntary corporate environmental and sustainability reporting.</p>
<p><b>Management Accounting (MA):</b> An organization's development of both non-monetary and monetary information to support both routine and strategic decision-making by internal managers</p>	<p><b>Environmental Management Accounting (EMA):</b> The management of environmental and economic performance via management accounting systems and practices that focus on both physical information on the flow of energy, water, materials, and wastes, as well as monetary information on related costs, earnings and savings. <b>See the next chapter for a more detailed discussion.</b></p>	<p>There are generally no external reporting requirements specifically associated with MA or EMA.</p>	<p>However, organizations use some of the information gathered under EMA for environmental regulatory reporting, national reporting or voluntary corporate environmental and sustainability reporting.</p>

Source: IFAC, 2005

The table shows the links between management accounting and EMA and helps organisations in the implementation of EMA.

#### **IV. Research Methodology**

This study adopts qualitative research design. A research design is the blueprint that enables the investigator to come up with solutions to problems and guides in the various stages of the research ( Dumbu and Choga, 2013). The researcher is able to obtain view points and personal feelings from the participants. This research design enables the researcher to gain in-depth understanding of whether environmental cost management accounting is being implemented in the Zimbabwe mining sector and in what form. The research method allows the researcher to have an in-depth discussion of the current position in as far as implementation is concerned as well as the achievement of sustainable development. This design enables the researchers to understand the challenges and opportunities identified in the implementation process. The study also used the descriptive survey design. A descriptive survey is concerned primarily with addressing the particular characteristics of a specific population of subjects, either at a fixed point in time or at varying times for comparative purposes. (Gill and Johnson, 2002). In this study the implementation of EMA in Zimbabwe mining sector is being considered at a fixed point in time to check the current position and map way forward on the implementation plan.

##### **Population**

Research population provides all the information necessary for answering the original research questions (Gill and Johnson, 2002). The population consists of registered operating mines in Zimbabwe Harare province. The population consists of an up-to- date list of over 300 registered mines within and around Harare. This study took 30% of the mining companies to be representative of all the different mining companies in Zimbabwe from gold, diamond, platinum among other mining areas. The study considers the 30% as the case study. The 30% represent 90 mining companies among over 300 registered operating companies.

##### **Sample and sampling procedure**

It is impracticable to involve all members of the population as indicated in the population above – thus selecting who participates in a survey is a crucial issue. In this study random sampling will be used, sometimes called probability sampling. The aim is to ensure that those who participate are a representative sub-set of the research population and thus any findings can be generalized or extrapolated to the target population with confidence (Gill and Johnson, 2002). As a rule of thumb 30 participants are required in a small population (Dumbu and Matanda, 2010), and for larger population 10% will be representative of the whole population. The target population in this research is 90 and 33% was taken to be representative of the whole population giving a response rate of 30 mining companies consisting of finance managers, Accountants, Accounts clerks and owners of the mining companies. The research used open and closed ended questionnaires which were self administered. The responses from administered questioners were used for data analysis. Data analysis was done or sorted according to themes which emerged from administered questionnaires.

#### **V. Results and discussions**

Most questioners were hand delivered and collected from respondents through their head offices some were e-mail to various companies. Questionnaires were sent to 30 mining companies and 25 companies responded which turned to 83% response rate. The respondents companies were from Platinum group companies, Gold producing companies (Mvuma), Diamonds producing companies (Mutare), Nickel, Coal (Hwange ), Copper, Chrome ore (shurugwi), iron ore, Silver, phosphate rock (Dorowa ) and Asbestos (shurugwi) which make up the most performing commodities in the Zimbabwe mining sector.

##### **Mining Sector Companies**

The responses from twenty five mining companies in the sector consisted of five from platinum mining, four from diamond mining, three from gold, iron and copper, two from chrome, silver and asbestos and one from phosphate ore mining. The responses were representative of the mining companies in Zimbabwe as shown in figure 4.1 below.

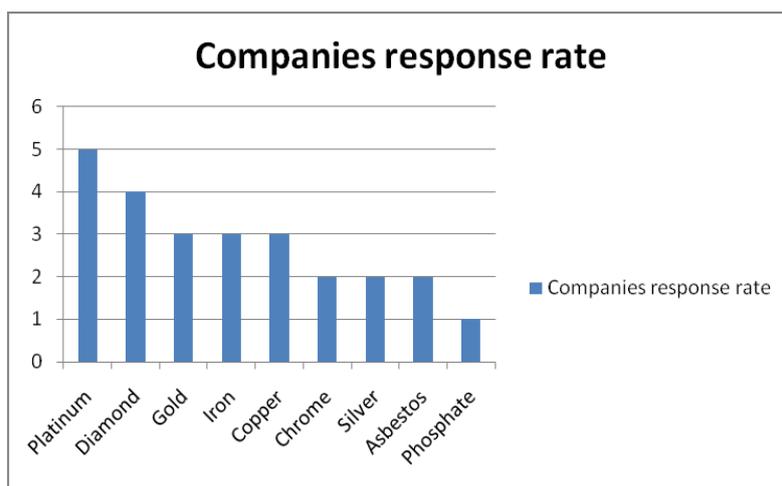


Figure 4.1 Mining Sector companies

Table 4. 1. Research participants by Gender

Gender	Frequency	Percentage (%)
Male	20	80
Female	05	20
Total	25	100

Table 4.1 show research participants by gender. Eighty percent of the research participants were male and 20 percent of participants were female. The uneven gender distribution in the mining sector is due to nature of the industry which attracts more of males than females.

Table 4.2 Research participants by age

Age (years)	Frequency	Percentage (%)
20-29	6	24
30-39	11	44
40-49	5	20
50+	3	12
Total	25	100

Table 4.2 above depicts research participants by age group. The highest age group being between the ages of 30-39 years (44%) followed by 20-29 years with 24%. The highest age group shows that the information which was obtained from this group will be coming from mature people and reliance may be placed on the information.

Table 4.3 Distribution of research participants by professional title

Professional Title	Frequency	Percentage (%)
Finance Manager	9	36
Accountant	4	16
Accounts Clerk	4	16
Finance Director	6	24
SHE Officer	2	8
Total	25	100

Table 4.3 portrays the professional titles of employees in the mining companies. Thirty six percent of research participants were finance managers which are decision makers and involved in the implementation of accounting and financial policies with the companies as well as formulation thereof. The group of Finance Managers was followed by finance directors with 24% these are policy makers and they are well aware of the policies in place in their companies. They also give orders of the implementation. Accountants and Accounts clerk research participants have 16% these are involved in the day to day capturing of business transaction in the companies and control of expenditures and revenue flow within a company. This group will be better place to give the researcher finer details of what exactly is transpiring in the shop floor area as they are involved in the implementation part of policies formulated by senior management. These research participants are assumed to be aware of the implementation of environmental management accounting within their organisation if any.

**Table 4.4 Distribution of research participants by professional qualifications**

Professional Qualification	Frequency	Percentage (%)
O'Level	25	30
A'Level	20	24
Certificate	5	6
Degree	15	18
Master	10	12
Professional Course( CIMA,ACCA,CPA,CA etc)	8	10
<b>Total</b>	<b>83</b>	<b>100</b>

Table 4.4 shows that the majority of the people are educated enough to know the requirements of the questionnaires and to answer question relating to the implementation of environmental management accounting at their workplace. The qualifications are related to the field of study. All the respondents have O'level representing 30% of the respondents. Some respondents were cutting across all the sections of the professional qualifications which reveal that they are well trained to answer questions relating to EMA.

### **Environmental Management Accounting in the mining sector**

The study show that environmental cost management in the mining sector differ from company to company as there is no set standard for what exactly is environmental cost management. This is compatible with IFAC, 2005 suggestions that environmental cost management differ from company to company. Much work has not been done in the mining sector to establish what exactly the mining sector should take as their environmental management costs. Much work has been conducted in the manufacturing sector were production of effluent products has been noticed as well as pollution and build up of polluted water reserves.

The present respondents have defined Environmental cost management in the mining sector as follows:

Costs which are directly or indirectly related to the mining environment. These costs include license costs (costs to acquire a paper which allows you to carry out your activities), regulatory costs ( costs related to environmental management agencies) and environmental taxes ( these include carbon tax, tax which is paid for the damages to the environment).

Environmental cost management is the ability to come up with all monetary costs related to the environment in order to make sound decisions for purposes of minimising costs to the company and to the environment.

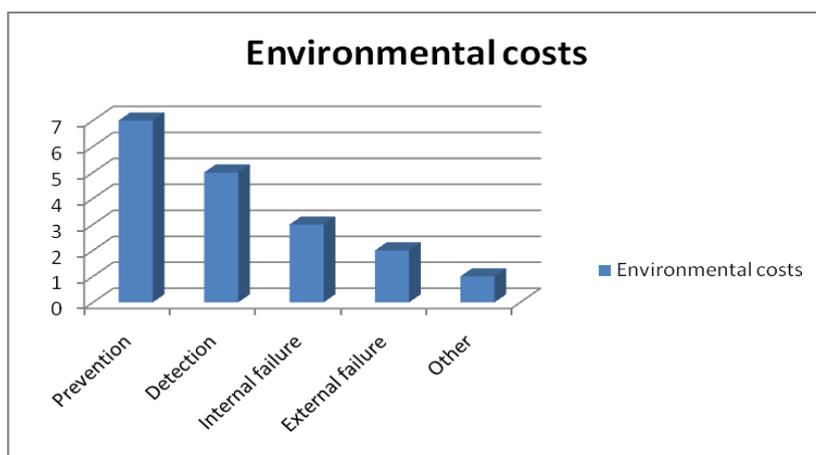
Environmental cost management has been defined as responsibility accounting which is expressed in monetary terms thus being accountable for your actions in the present in order to mitigate against future impacts.

The research shows that environmental management accounting differs from company to company and there is no standard definition established. The company depending with its operations need to define what environmental management accounting is. The term is sometimes loosely used to include the consideration of taking cognizance of costs which relate to the environment.

The research findings from respondents are in consistency with environmental quality cost model as explained by Hansen and Mowen, 2000 that before environmental costs must be defined before environmental cost information can be given. Total environmental quality cost model ideal state or definition is that of zero damage to the environment which is analogous to zero defects state of the total quality management (TQM). Damage has been defined as direct degradation of the environment such as the emission of solid, liquid or gaseous residues into the environment, or indirect degradation such as unnecessary usage of materials and energy (Hansen and Mowen, 2000 ). The definition in line with damage has been sited by respondents when they gave their definition of environmental management accounting in the mining sector.

### **Environmental costs in the Mining Sector**

Environmental costs in the mining sector have been referred to as environmental quality costs. These are costs which are incurred because poor environmental quality exists or may exists. Environmental costs have been grouped into four categories as shown below on figure 4.2. The environmental costs were rated on a scale of 1 to 10 depending on costs which are most incurred one being the lowest and ten being the highest level of costs.



**Figure 4.2 Environmental costs**

The above findings show that most companies are incurring environmental prevention costs with a scale of seven which is on the high side. The prevention costs are costs of activities carried out to prevent the production of contaminants and/or waste that could damage the environment. These costs are in the form of research and development, developing environmental management systems, auditing environmental risks. These costs are high enough in order to reduce external failure costs which are on a scale of three because of the work or costs incurred on preventive costs. The external failure costs can cost a company billions of dollars as explained by Hansen and Mowen, 2000 reiterating that environmental external failure costs are the most devastating of the four categories of environmental costs.

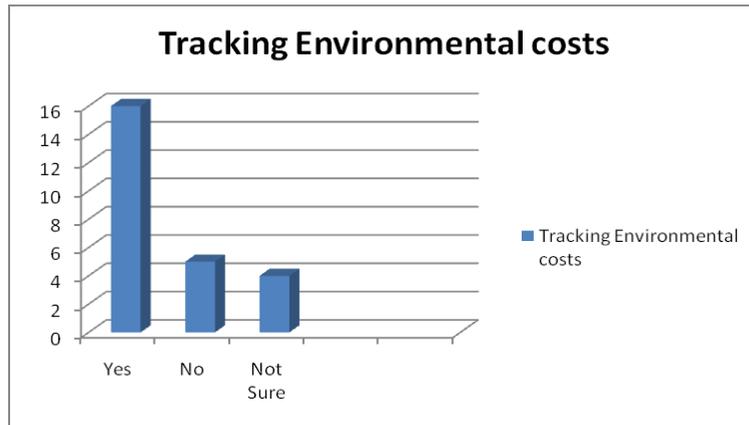
Environmental detection costs have been explained by the despondences as the costs of activities executed to determine if products, processes, and other activities within the firm are in compliance with appropriate environmental standards. These costs include regulatory costs from environmental management agency (ema), carry out contamination tests, measuring levels of contamination, inspecting products and processes among other costs. These costs on a scale of 1 to 10 have been rated at 5 points. These costs are similar to prevention costs and mining companies are incurring these costs to avoid external failure costs.

Because of the feed forward approach to the system of environmental management accounting, environmental internal failures have been rated at 3 point scale. Environmental internal failure costs include treating and disposing of toxic materials, licensing facilities for producing contaminants, maintaining pollution equipment. The internal failure costs are costs of activities performed because contaminants and waste have been produced but no discharged into the environment. The internal failure costs are incurred to eliminate and manage contaminants or waste once produced (Hansen and Mowen, 2000).

The external failure costs are the most devastating cost as explained earlier much effort is done to reduce their devastation as defined by Hansen and Mowen, (2000), environmental failure costs are the costs of activities performed after discharging contaminants and waste into the environment. These are reactive measures which are difficult to deal with and the costs can be avoided if a company is able to invest in preventive measures. The costs have been rated to be on a scale of one in terms of the occurrence of the cost.

### **Tracking of Environmental costs**

Of the twenty five companies only sixteen companies show enough evidence of fully tracking environmental costs and five companies were not tracking environmental costs. The other four companies were not sure whether environmental costs were being tracked fully and accorded the actual recording and disclosure in the books of accounts.

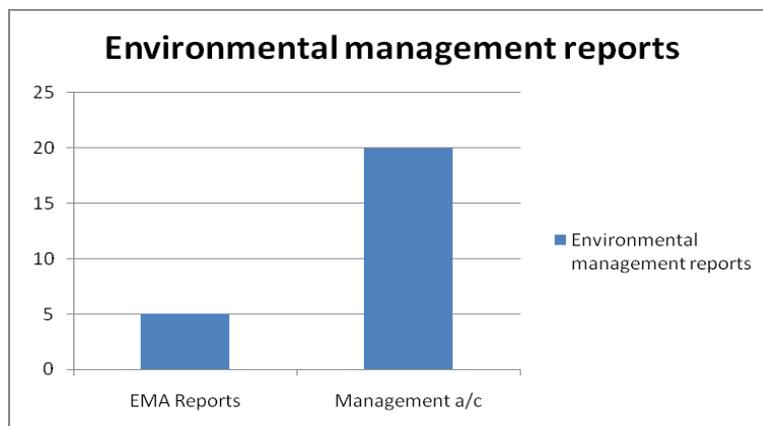


**Figure 4.3 Tracking Environmental costs**

The above findings show the importance of tracking environmental costs as explained by Mowen and Hansen (2000) that tracking environmental costs is important if the organisation is serious about improving its environmental performance and controlling environmental costs. The ability to track environmental helps an organisation make sound decisions which enhances sustainable development as well as the growth of the company. Tracking environmental costs helps the organisation to come up with an appropriate costing system for its products and services.

**Environmental cost Management Reports/Environmental financial reports**

The environmental cost management reports differ from company to company. Some reports were being done in line with categories shown above (preventive, detective, internal and external failure costs). The environmental cost reports reveal two important outcomes: the impact of environmental costs on a firm’s profitability and the relative amounts spent on each category (Hansen and Mowen, 2000). The environmental costs are expressed as a percentage of total operating costs for decision making purposes. Environmental cost will receive managerial attention if they represent a significant amount, as a rule of thumb that is 10% or more of operating costs. These costs can significantly affect the firm’s profitability. Of the 25 companies, 5 companies reveal that they have environmental cost management reports while the other 20 reveal that they only produce management accounts which have a component of environmental costs and in coming up with the impact of environmental costs on the operations they use management accounts to extrapolate information they would require for decision making as well as variance analysis of different cost and revenue sections. Table 4.4 below shows the results.



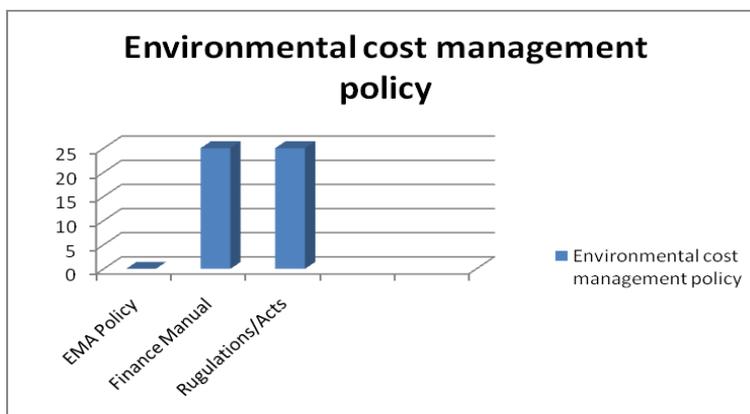
**Table 4.4 Environmental management reports**

The environmental management reports in some cases are referred to as environmental financial reports. These reports show the revenue and expenditure of the company for decision making purposes.

**Environmental cost management policy**

The results show that mining companies do not have a stand alone policy in environmental cost management. The mining industry is regulated by many acts (about twenty-one ) among the mentioned by respondents were mining (managements and safety) regulations, explosives Act, environmental management

acts, Atmospheric pollution prevention Act, water Act, Forestry Act and hazardous Substances and Articles Act among others. These acts combined make up the environmental cost management policy. However the companies are guided by the finance procedure manual which is in all twenty five companies surveyed. The finance procedure manual guide the finance people in executing their duties in the finance department as well as the non-finance staff in interacting with the finance department on financial issues like requisitions orders, payment of suppliers etc. The 25 companies with policies were categorized into three areas those with EMA policy, those with finance procedure manuals and those using regulatory acts that govern the mining Industry to come up with environmental cost management at the work place. The results are summarized on Table 4.5 below.



**Table 4.5 Environmental cost Management policy**

The findings indicate that the companies in the mining sector, mineral mining companies do not have EMA policy, twenty five have both finance manual and regulatory acts. The regulations govern all their operations with the finance procedure manuals.

#### **Sustainable development in EMA**

The research findings show that every activity done by mining companies point towards sustainability. The 21 important pieces of legislature that govern the mining operations all point out to sustainable development by their implementation. The twenty five mining companies pointed out that they try to protect the future interests of the areas they will be operating in. This is in line with IFAC (2005) guidelines which states that the operations currently done should not compromise the future generations to derive benefits from the environment.

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

The study aimed at looking whether EMA is being implemented in Zimbabwe mining sector. The study objectives were to explore the implementation, discuss the tracking of environmental costs, the need for EMA in the mining sector and examine if EMA enhances sustainable development. Environmental Management Accounting in Zimbabwe mining sector is in its infancy. There is no single acceptable definition for environmental management accounting. The definition for EMA differs from one mining company to the other though there is enough evidence that every company has a definition for EMA which is in line with their operations.

- Environmental cost management accounting in the Zimbabwe mining sector is being implemented in piecemeal. There is need for the government of Zimbabwe to develop a framework suitable for Zimbabwe for the implementation of EMA. The organisations are not aware of IFAC guidelines and the criteria they might take in implementation of EMA. The mining sector is taking the implementation of EMA as the ability to follow the environmental mining regulations like the environmental management act.
- There is enough evidence which points out that environmental cost are being tracked and reported. The reports are not specific to indicate environmental management reports which shows revenue generate from environmental management and expenses incurred in managing the environmental costs. The management reports which are produced are general reports with environmental costs elements. The reports should be specific for decision making purposes to the environmental effect. There is need for every organisation in the mining sector to come up with an environmental management policy in order

to generate revenue and for investment decision which point out to sustainable development. The EMA policy should support government regulations and acts for full compliance.

- PAAB should develop EMA guidelines for the mining sector since no work has been done for the mining sector. Most work Environmental management accounting has been done in the manufacturing sector. Mining is a fast growing sector in Zimbabwe and the development of guidelines in this area will improve or enhance sustainable development in Zimbabwe.
- Thorough tracking and implementation of EMA enhances sustainable development.

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