



## Environmental Management Activity toward Financial Performance in Indonesian Mining Companies

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**Abstract.** The objective of this study is to determine the influence of environmental management activity based on Indonesia's statement of financial accounting standards number 33, namely accounting for mining towards the financial performance of Indonesian mining companies. The measurement of environmental activity was proxied by three environmental activity. They are disclosure of stripping costs in the production phase, exploration and evaluation of assets and environmental management on general mining.

There are 41 samples of this research consisting of all mining companies in Indonesia that have fulfilled the sample criteria from 2011 until 2013. The data on this research was tested by multiple linear regression. The result of this research showed that the stripping costs in the production phase and environmental management on general mining had significantly positive effects on financial performance, while exploration and evaluation assets had significantly negative effects on financial performance.

This study shows that the cost to acquire the best technology that companies use when performing exfoliating ground at the beginning of production activity brings a positive performance for the company. Similarly, environmental management implemented in the company also had a positive impact for the survival of the company. These results indicate that the company implemented best act in the management of the environment, increasing the company's performance. The consequence of all this is the sustainability of the company is increasingly assured.

**Keywords.** *environmental activity, Indonesia Statement of Financial Accounting Standards number 33, accounting for mining, exploration and evaluation of assets, financial performance*

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### 1. Introduction

Environmental problems are an important topic in global economics. This is evident from the development of environmental regulations that aim to create environmental protection and sustainable development. Responsibility about a company's environment is very important for sustainability of the company. A company's accounting is expected to reveal some findings in an annual report regarding allocation of environmental costs, such as some accounts with environmental cost.

A company's responsibility to the environment is a moral obligation and a constitution that must

be implemented. A company's image in society, not only as economic actor but also as social actor. The company's responsibility to the environment can also be seen as a business strategy for long-term investment decisions, as a company's commitment to the environment can affect its competitiveness. The long-term environmental cost that should be paid will make a company gets investor's positive response in the form of the expanding of market share.

Mining is one of the industrial sectors in which the production activity is directly related to the

environment. Mining activity can affect the environment around the mining location. In order to minimize and control the negative effects of mining activity, it is necessary to conduct environmental management that includes a concerted effort in the utilization, structuring, maintenance, monitoring, controlling and development of environmental, which has been set in Indonesia's statement of financial accounting standards number 33 (*PSAK 33*) about mining accounting.

Gray (1993) explained that environmental disclosure is part of a financial report. That research also explained that there were many researchers that further investigated social information that was produced by the company and found that environmental information was one aspect of that information. Furthermore, Gray stated that environmental disclosure is the important part of a company's financial report.

In Indonesia, there is a regulation that controls responsibility and the environment. Based on Government regulation section 74 Constitution Limited liability company Number 40/2007, every company must reveal information about environmental disclosure that is supported by Indonesia's statement of financial accounting standards number 33 (*PSAK 33*), which controls companies' from the mining sector responsibility to report environmental items in their financial report. The regulation is supported by legitimacy theory, which supports social norms for environmental disclosure.

In this research, the environmental disclosure that is going to be investigated is the activity of environmental management based on *PSAK 33*, which is about stripping, environmental management because of exploration and evaluation and environmental management because of production. Pava and Krausz (1996) explained that information that is revealed by companies will not cause them to lose their stakeholders. The companies that show their social responsibility prove that they have better performance than others who do not show their social responsibility.

There is undoubtedly a relationship between the environment and economics. Recently, green accounting has gotten serious attention in relating activity of the companies with environmental

impact so that it will be able to make strategic plans and management decisions making which appropriate if in the financial report stated the accounts which is related to environment. Some previous research empirically proved that there is a positive role between implementation of green accounting and companies' financial performance. When companies implement green accounting and can show a better environmental performance, they have better financial performance. This has been proven by research that shows the financial performance, in this case market value from the companies, is greatly influenced by environmental performance, and the influence is positive. The relationship between environmental performance and financial performance can be seen from the income and cost perspectives.

Research about environmental performance and the quality of environmental disclosure has been done by Lindrianasari (2007). The results showed that companies will only give information when they have good information. Besides that, to provide environmental disclosure and to improve environmental quality, many companies in Indonesia do not get motivation from companies' economic performance. Mehen-a and Vernon (2004) described green accounting as an expansion path that deals with environmental performance and the integration of environmental policy with business policy. The business firm's strategy includes responding to capital and operating costs of pollution control equipment. This is caused by increasing public concerns over environmental issues and by the recent government trend toward incentive-based regulation. Furthermore, they found that the environmental component of the business strategy, producing the required performance reports and recognizing the multiple skills required to measure, compile and analyze the requisite data.

Based on the information above, it can be said that environmental cost disclosure shows business etiquette and proves that environment resource management is being handled responsibly. This improves social trust from the stakeholders like society and consumers, which, in the end, improves financial performance, like

achievement of maximal companies' profitability.

This research investigated the following research question: "Do environmental management activities influence financial performance in mining companies that are registered in the Indonesia Stock Exchange 2011-2013?". Generally, this research provided empirical evidence that environmental management activities do influence financial performance in mining companies that are registered in the Indonesia Stock Exchange 2011-2013. This research is expected to benefit academicians, companies, government and society.

## 2. Theoretical Background, Literature Review, and Hypothesis Development

### Indonesia Statement of Financial Accounting Standards Number 33 (PSAK 33)

Based on PSAK 33 (2011), environment is the unity of space with all things, energy, conditions and living creature, including humans and their behavior, that influence life and prosperity of a person and other creatures. The cost of environmental management is a cost that emerges from efforts to reduce and control the negative effects of mining activity and other daily costs. Mining activity in certain areas affects the environment around the mining location, including but not limited to:

- a. Dirtying the environment, including living creatures, substances, energy, and other components related to the environment and/or the change of environment by human activities or natural processes such that the quality of the environment changes.
- b. Damage to the environment due to activity that causes either direct or indirect changes to the characteristics of the environment and/or living environment, which causes the environment not to function well and prevents sustainable development.

In an effort to reduce and control the negative effects of mining activity, managing the environment must be done by the companies, including sustained efforts to explore, regulate, maintain,

monitor and control environmental development.

Scope of *PSAK 33* applied for general mining accounting, which are related to:

1. Stripping activities and early stripping to open the mining, stripping which is done before the production and advance stripping done during the production process.
2. Environmental management activity

Appraisal cost for environmental management activity which emerges because of exploration activity and development recognized as asset appraisal cost for environmental management which emerge because of production activity recognized as expense.

### Environmental Accounting

Environmental activity is grouping cost which is done by companies in doing environmental conservation to companies' business practice. This environmental conservation activity will emerge environmental cost that must be handled by the companies. Environmental accounting can also be defined as a quantitative measurement framework for environmental conservation activity, which is done by the companies. Lintott (1999) argued that green accounting evaluates a general measure of welfare that leads to costly management decisions. Problems of monetary valuation are likely to lead to accounting procedures. Industrial firms, regardless of size, can increase profits and use correct estimations of environmental costs.

Based on the definition above, it can be explained that environmental accounting is accounting that identifies measures, scores and reveals the cost to environment of companies' activities. Environmental accounting in environmental accounting guidelines (EAG, 2005) is defined as follows:

*"Environmental accounting, as defined in these guidelines, aims at achieving sustainable development, maintaining a favorable relationship with the community, and pursuing effective and efficient environmental conservation activities. These accounting procedures allow a company to identify the cost of environmental conservation during the normal course of business, identify benefit*

*gained from such activities, provide the best possible means of quantitative measurement (in monetary value or physical units) and support the communication of its results”.*

Berry and Rondinelli (1998) as cited in Ja'fardanArifah (2006), stated that some factors that influence companies to conduct environmental management activities are:

### **1. Regulatory Demand**

Companies' responsibility to the environment emerged 30 years ago, after society increased pressure on governments to release their regulation information because of the spread of pollution. A monitoring system of environmental management is the base for environmental scoring, such as health programs and environmental security. Companies assume that it is important to get achievement in environmental area, by applying TQEM principal (Total Quality Environmental Management) effectively, such as using technology to control the pollution through the use of clean technology. On the other hand, some regulation of win-win solutions is needed between groups involved in creating innovation and competition and high levels of productivity for the whole company.

### **2. Cost Factors**

Complaints about company's products will cause the high cost of quality monitoring, because all activities involved in the production process need to be well prepared. This will directly influence the emerging of costs, which is quiet high, such as rough sorting costs, costs of monitoring the production process and testing costs. Companies' tendency to decrease pollution also will create other costs like waste management, the use machines using clean technology and preventive hygiene cost.

### **3. Stakeholder Forces**

A proactive approach strategy for environmental management is built based on management principles such as decreasing waste and decreasing production costs and also responding to con-

sumer demands and stakeholders. The companies will always try to satisfy stakeholders' interests by finding out the needs of environmental management which is proactive.

### **4. Competitive Requirements**

The development of the global market and the emergence of some trade agreements have influenced the emergence of standardized environmental quality management. National and international competition has pushed the companies to get quality guarantees, such as ISO 9000. Meanwhile, ISO 14001 is for international standards of environmental management systems. Both of them are different in terms of criteria and needs, but they are interrelated practically, by integrating environmental management systems and company management systems. To achieve the superiority in competition, it can be done by implementing green alliance. Green alliance is a partner between business actors and group of environment to integrate between environmental responsibilities with market goals.

Moorthy and Yacob (2012) described green accounting as an emerging aspect of accounting science that will influence in the near future. The adoption of basic elements of green accounting will portray the role of environment in the economy as well as make the analysis of macro-economic questions easier with the help of green accounting measures and thus, will lead the economy to a viable path. Below is the table of green accounting measures by Moorthy Yacob (2012).

Environmental accounting, as defined before, aims to achieve sustainable development, to keep relationships that are beneficial for society and to pursue the effectiveness and efficiency of environmental conservation activities. The importance of companies' efforts can be seen from the environmental performance score. A record of companies' efforts in protecting the environment can be measured by environmental accounting. Allocation of economic resources toward companies' effort in protecting the environment can, hopefully, provide good news for investors and potential investors.

**Table 1**

## Green Accounting Measure

Description	Green Accounting Issues and Scope
Pollution Prevention Costs	Costs incurred to prevent air and water pollution along with water treatment facilities and other activities.
Environmental Protection Costs	Costs of energy saving measures as well as costs of global warming reduction measures.
Costs of Resource Recycling	Costs incurred for waste reduction and disposal as well as for water conservation, rainwater usage and other measures aimed at efficient resources usage.
Environmental Restoration Costs	Cost of environmental restoration operations (eliminating soil and ground water contamination, environmental compensation, etc.)
Management Costs	Management-related environmental protection costs including environmental promotion activities and costs associated with acquiring and maintaining ISO14001 certification.
Social Promotion Activities Costs	Environmental protection costs stemming from participation in social activities such as participation in organizations concerning with environmental preservation etc.
Research and Development Costs	Environmental protection costs for research and development activities and costs of environmental solutions business activities (green product/environmental technology design and development costs, environmental solutions business costs, others) etc.

### Previous Literature, Theoretical Concept, and Hypothesis Development

#### Influence of environmental management activity toward finance performance of mining companies

There were various results from the previous research that explained the influence of environmental management toward companies' performance. This research supports Al Sharairi's research (2005), which stated that environmental costs positively influence a company's competitive advantage and support the results of Aniela

(2012) which stated that environmental accounting positively influences companies' performance. Richardson et al. (2001) has done the observation on social disclosure of the companies. Richardson reported that there is a positive and significant relationship between the level of environmental disclosure and the cost of capital. He further argued that companies will do better disclosure when companies' profitability is better.

Amran and Devi (2008) discuss how green accounting literature has paid little attention to either organizational influences on a company's practices or the ways a company's practices influence the organization. Dinah Shelton (2004) described the importance of and impact on the green auditing system in relation to environmental development. She pointed out that green auditing and accounting is the same and plays a critical role in promoting the public and the environmental organizations that could be worked on based on the human rights approach. This means that environmental education is working in line with the human rights documents context.

This research is supported by the triple bottom line concept where this concept implements 3 pillars, that are people, profit and companies' environmental. This concept concern that focus of the companies not only on profit but also the companies must focus to environmental activities. There are also some theories that support this theory, stakeholder and legitimacy theory where both of theories concern about companies' responsibility of environmental and social to stakeholders' needs and the development of the companies

Along with the increase of environmental damage and society's awareness to protect their environment, companies, as a part of the environment, need to pay attention to environmental sustainability. The company itself as a legal entity must be responsible to shareholders and stakeholders for their company's management. The management must be able to show their good performance to the group related to financial performance and environmental performance. Because of this, when company conduct

activities that support environmental management, management must maintain records of any expenses related to the activity of the environment.

This research doesn't support Sarumpaet's research (2005), which stated there is no significant relationship between environmental performance and financial performance, nor does it support the research of Lindrianasari (2007), which stated that there is no relationship between economic performance and environmental performance. This is because companies' social responsibilities through some dimension of social cost don't have economic consequences because of the form, type and social cost strategy used by the companies tend to have an indirect effect. The companies do the social responsibilities through some social costs seeing from perspective and management motif, do not concern and provide stakeholders' needs.

### Hypothesis Development

Based on previous research and theories that underlie relationships between variables that are being investigated in this research, the hypotheses are:

**Ha<sub>1</sub>:** Stripping positively influences financial performance in mining companies' annual report, which is registered in Indonesia Stock Exchange

**Ha<sub>2</sub>:** The cost of environmental management caused by the exploration and evaluation positively influence financial performance in mining companies' annual report, which is registered in the Indonesia Stock Exchange

**Ha<sub>3</sub>:** The cost of environmental management caused by production positively influences financial performance in mining companies' annual reports, which are registered in the Indonesia Stock Exchange.

## 3. Research Design

### Variable of the Research

#### Environmental Management

Environmental management activity is information about environmental accounting data based on Indonesia's statement of financial accounting standards number 33 (*PSAK 33*), which consist of stripping, environmental management caused by exploration and evaluation and environmental management caused by production.

$$\text{Stripping} = \text{Stripping cost year } t$$

#### Environmental management

$$\text{Exploration and evaluation} = \text{Exploration and Evaluation asset year } t$$

$$\text{Production} = \text{Allowance for environmental management year } t$$

#### Financial Performance

Return On Investment (ROI) is used to identify potential money ratios which are going to get from investment result. ROI is a money ratio that gains in an investment, depending on the money being invested. The amount of money which can be gained or lost can be said as interestor profit/loss. Money investment can be used as asset, capital, principal, basis of investment cost.

$$\text{ROI} = \frac{\text{Total selling} - \text{Investment}}{\text{Investment}} \times 100\%$$

### Sample

The sample used in this research is mining companies that are registered in the *Indonesia Stock Exchange*. The sample of companies chosen from all populations of public companies in the *Indonesia Stock Exchange (BEI)* are based on the availability of data to count variables which are explained before.

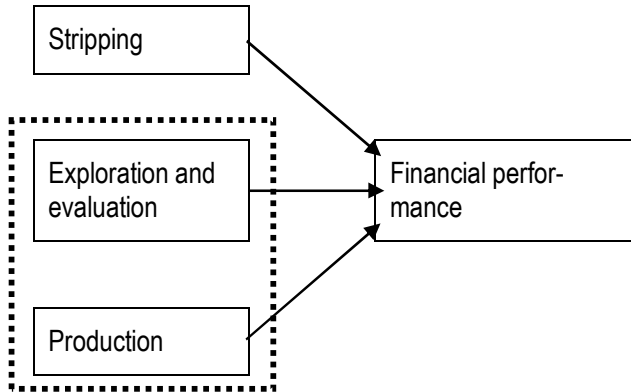
### Analysis Method

The hypotheses set in this research will be tested by using multiple linear regression analysis and partial test (t test). Every hypothesis will be an-

alyzed by using multiple linear regression analysis and partial test (t test), which are good for testing the relationship among the variables.

## Research Method

### Environmental Activity



### Environmental Management Activity

#### Independent Test

A regression model can be said to have succeeded if it produces a good estimator that fulfills some assumptions which very influence to the change of dependent variable. Because of that, descriptive statistic tests and normality tests need to be done first. Multiple linear regression analysis and partial test (t test) are used for data, which normally distributed to test statistically the influence of environmental management toward financial performance of mining companies which are registered in the *Indonesia Stock Exchange*BEI.

## 4. Result

### First Hypothesis Testing

Stripping, which is used to open the mine, is stripping that is done before the production begins; and advance stripping is done during the production process. The cost of early stripping is considered an asset, while the cost of advanced stripping is considered an expense. Based on the results of the testing, it is found that there is a partial influence of probability value in stripping variable (0.010), meaning that the value is below the significant amount, which is 0.05, and it is significant. Also,  $H_a$  is partially accepted and can be explained that there is significant influence

between stripping variable toward return on investment on mining companies sector, which is registered in Indonesia Stock Exchange 2011-2013.

**Table 2**

Results of the test

Model	T test	Significant
Constant	0.578	0.567
Stripping cost	2.697	0.10

The confession to some stakeholders outside the investor can influence the effectiveness of achieving companies' goals, which has changed the dimension of companies' responsibilities from economic responsibility in the form of profit maximization to the prosperity of investors, which is a broader prosperity achieved by the company not limiting their interests to those of shareholders.

Based on *PSAK 33*, environmental management costs are not limited to the activities above. Basically, this cost is to provide facilities for environmental management. This cost emerges because of the effort to reduce and control the negative effects of mining activities and daily costs. *PSAK 33* is aimed to treat accounting upon the stripping activity and environmental management in general mining.

### Second Hypothesis Testing

The environment is the unity of space with all things, energy, condition and living creatures, including humans and behavior, which influence life and prosperity of people and other creatures. The mining activity in certain areas affects the environment around the mining location.

Based on the results of the research, it is found that the probability score of environmental management costs are variable because exploration and evaluation is 0.531. This means that the probability score is above the standard, which has been set at 0.05, and that  $H_a$  is rejected. Therefore, there is not a significant relationship between environmental management costs because of exploration and evaluation toward the

Return on Investment on mining companies sector which is registered in Indonesia Stock Exchange 2011-2013.

**Table 3**

Results of the test

Model	T test	Significant
Constant	0.578	0.567
Cost of environmental management caused by the exploration and evaluation	-0.632	0.531

In relationship between environmental management cost because of exploration and evaluation toward the Return on Investment the legitimacy theory and Triple bottom line is not happen. Legitimacy theory is a theory that is often used researchers mainly related to social and environmental areas. Although many researchers are still in doubt of this theory, this theory has provided clear perspective about confession of a company from society. According to Ahmad and Sulaiman (2004), legitimacy theory is based on the definition of social contract and implicated between social institution and society. Ghazali and Chariri (2007) explained that to legitimate companies' activity on society's view, companies tend to use performance which is environmental basis and environmental information disclosure. Meanwhile, Triple Bottom Accounting theory has been a reference on some occasions and is realized in three main components: person, profit and companies' environment. Person related to humanism touch which organized by the companies. Profit is a big economic variable that shows the companies' ability to earn profit. The environment shows the symbiosis between companies and companies' environment. Triple Bottom Line implemented by three domains: social, economy and environmental. Activity that is done and developed to get a good image from the important person in the company. Companies' responsibilities to the Triple Bottom Line's pillars can be seen from two perspective. First, responsibility is a moral and constitutional obligation.

Surely, that thing is a correction for mining companies related to environmental management cost disclosure because of exploration and evaluation. Environmental accounting must provide valid information related to the advantages of environmental management costs that can support stakeholders' decision making. However, consideration must be given to materiality and relevant significance. In environmental accounting, materiality is placed in quantity spec and significance is placed in quality spec. From the materiality point of view, attention is given to the quantitative impact from data which said in monetary or physically, while significance focuses on information quality from the environmental point of view or future impact which follows it.

### Third Hypothesis Testing

The relationship between environmental management costs because of production activity and Return on Investment (ROI) found that the probability score of management cost because of production activity variable is 0.012. This means that the score is below 0.05, so  $H_a$  can be accepted. There is a significant influence between environmental management costs because of production activity and Return on Investment in the mining companies sector, which is registered in the Indonesia Stock Exchange 2011-2013.

**Table 4**

Results of the test

Model	T test	Significant
Constant	0.578	0.567
Cost of environmental management caused by production	2.643	0.012

Legitimacy theory and Triple Bottom Line theory are happened in correlation of two variables. Legitimacy theory suggests the companies make sure that their activities and performances can be accepted by society. The companies use their annual report to draw their environmental responsibilities so that they are accepted by soci-



ety. Legitimacy is a system of company management which orient to society, government, individual, and group of society.

Activity which done and developed is to get the better image from the important person in the company. The company's responsibility to pay attention to pillars of Triple Bottom Line can be seen from two points of view. First, responsibility is a moral and constitution obligation, which must be implemented. The company's point of view is in the middle of society not only as an economic actor but also as social actor. Second, responsibilities must be seen as part of business strategy for long-term investment decisions to place the company in a business environment that is conducive and competitive. In the short term, the consequence of that responsibility is that costs can reduce profit, but in the long term, the costs which are spent by the companies, can make the companies better than others like it, expanding their market share. Basic characteristic of environmental accounting is appropriate for relationship between environmental management cost because of the production activities toward the Return on Investment (ROI) is relevant and can be proved.

## 5. Conclusion

Based on the results in the previous chapter, it can be concluded that:

1. There is a significant influence between Stripping variable toward Return on Investment (ROI) in mining companies, which are registered in the Indonesia Stock Exchange 2011-2013.
2. There isn't a significant influence between environmental management costs because of exploration and evaluation toward Return on Investment (ROI) on mining companies, which are registered in the Indonesia Stock Exchange 2011-2013.
3. There is a significant influence between environmental management costs because of production activities toward Return on Investment mining companies, which are registered in the Indonesia Stock Exchange 2011-2013.
4. Simultaneously, there is a significant influence among Stripping variable and environmental management cost because of exploration and evaluation, and environmental management cost because of production activities toward Return on Investment (ROI) on mining companies which are registered in Indonesia Stock Exchange 2011-2013.

This study shows that the cost to acquire the best technology that companies use when performing exfoliating ground at the beginning of production activity, bring a positive performance for the company. Similarly, environmental management implemented in the company also had a positive impact on the survival of the company. These results indicate that the company implement best act in the management of the environment, increasing the company's performance. The consequence of all this is the sustainability of the company is increasingly assured. The main role of environmental accounting is to solve the social environmental problems and may have an impact on attaining sustainable development in any country and influences the company's behavior in confronting social and environmental responsibility issues.

## 6. Suggestion

Based on the analysis of the results and conclusions, which have been stated before, there are some suggestions that we can give:

1. Through the implementation of environmental accounting, hopefully, the environment will be saved. In implementing environmental accounting, companies will obey the government's regulations where they run their business. Based on the results of this research, the companies, especially mining companies, must be aware of environmental management costs because it is very important to the sustainability of the environment.
2. For the next researcher, it is suggested to use more samples that have different characteristics from a sector related to the environment and expand the length of the research. In addition, the next researcher should add an independent variable that can influence Return on Investment.

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