

THE OCCURRENCE OF ENVIRONMENTAL DISCLOSURES IN THE ANNUAL REPORTS

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Abstract

This study aims to evaluate whether the occurrence of environmental disclosures in a corporate annual report is associated with a firm environmental visibility. As environmentally visible firms are easier to observe by relevant constituents, they are more vulnerable to public scrutiny. This paper hypothesizes that environmentally visible firms tend to disclose environmental information in their annual reports as compared to those of less visible companies.

A firm's environmental visibility is proxied by size, profitability and industry sensitivity to the environment. While firm size is measured by total asset and profitability is measured by return on Asset (ROA), industry sensitivity is measured by the sensitivity of firm activities to the environment. Industry sectors such as banking, insurance, finance, services are considered as non-sensitive, whereas those of chemical, forestry, mining, automotive, paper and timber, are considered as sensitive sectors. This paper uses the categorization by the Indonesian Accounting Standards (PSAK) No. 32 and 33 which considers forestry and mining firms as the most environmentally sensitive industries by requiring firms in these sectors to report any material information regarding environmental issues.

Environmental disclosure in this study is measured by the occurrence of environmental information in the annual reports using a dummy variable (1, if it occurs and 0, otherwise). The sample consists of 205 companies listed on Jakarta Stock Exchange in 2002. It is found that 66 of companies under non-sensitive industries did not mention any environmental information. This study also shows that the occurrence of environmental disclosure in annual reports of Indonesian companies is associated with size and industry sector, but not with profitability.

Keywords: *environmental disclosure, environmentally sensitive industry, returns on asset, profitability, logistic regression.*

Abstrak

Penelitian ini bertujuan untuk mengevaluasi apakah pemaparan mengenai lingkungan dalam laporan tahunan perusahaan berkaitan dengan visibilitas lingkungan suatu perusahaan. Karena perusahaan-perusahaan yang memiliki visibilitas lingkungan lebih mudah diamati oleh konstituen yang berkaitan, perusahaan tersebut cenderung mudah diamati dengan teliti oleh masyarakat umum. Penelitian ini mengajukan hipotesis bahwa perusahaan-perusahaan yang memiliki visibilitas lingkungan memiliki kecenderungan lebih tinggi untuk memaparkan informasi yang berkaitan dengan lingkungan dalam laporan tahunan mereka dibandingkan dengan perusahaan yang kurang memiliki visibilitas lingkungan.

Visibilitas lingkungan suatu perusahaan ditunjukkan dengan ukuran, profitabilitas dan sensitifitas industri terhadap lingkungan. Ukuran perusahaan diukur dengan return on Asset (ROA), sedangkan sensitifitas industri diukur dari sensitifitas kegiatan perusahaan terhadap lingkungan. Sektor industri seperti perbankan, asuransi, keuangan, dan pelayanan dianggap tidak sensitif terhadap lingkungan sedangkan sektor industri kimia, perhutanan, pertambangan, otomotif, kertas dan kayu dianggap sebagai sektor yang sensitif terhadap lingkungan. Makalah ini menggunakan kategorisasi dari Pedoman Standar Akuntansi Indonesia (PSAK) nomor 32 dan 33 yang menganggap perusahaan perhutanan dan pertambangan sebagai industri yang paling

sensitif terhadap lingkungan sehingga mengharuskan kedua sektor tersebut untuk melaporkan semua informasi yang berkaitan dengan isu-isu lingkungan.

Pemaparan informasi yang berkaitan dengan lingkungan dalam penelitian ini dinilai dari adanya informasi lingkungan dalam laporan tahunan dengan menggunakan variabel dummy (nilai 1 jika ada, dan 0 jika tidak ada). Sampel penelitian ini terdiri dari 205 perusahaan yang terdaftar pada Bursa Efek Jakarta pada tahun 2002. Hasil penelitian ini menunjukkan bahwa 66 perusahaan yang termasuk dalam industri yang tidak sensitif terhadap lingkungan tidak menyebutkan informasi apapun yang berkenaan dengan lingkungan. Hasil penelitian juga menemukan bahwa terdapatnya environmental disclosure dalam laporan tahunan dari perusahaan-perusahaan di Indonesia berkaitan dengan ukuran perusahaan dan sektor industri dan tidak berhubungan dengan profitabilitas.

Kata kunci: *environmental disclosure, industri yang sensitif terhadap lingkungan, returns on asset, profitabilitas, regresi logistik*

INTRODUCTION

Awareness of environmental issues has grown substantially among different stakeholders in the society. The public's concerns on the issues increase as they demand transparency from the companies in regards with how business operations give impacts to the natural environment. Accordingly, interested parties, such as NGOs, are imposing pressures to the corporations and pay attention to the way they manage their environmental impacts.

Until today, most developing countries' environmental policy relies heavily on voluntary initiatives of organizations or individuals. Although recently some of these countries have conducted mandatory programs to measure for environmental performance and to communicate these programs to their stakeholders. Corporate environmental disclosure can be done through company website, reports, label and releases. Previous studies show that environmental disclosure increased following the growing public awareness in environmental issues (Harte and Owen, 1991; Gamble et al., 1995; Gray, Kouhy and Lavers, 1995; Walden et al., 1997; Cormier and Magnan, 2003).

However, the current practice of corporate environmental disclosures by many listed firms is mostly done on voluntary basis, except those particular countries or industry sectors in which the regulations require environmental disclosure. In Indonesia, environmental disclosure has also been voluntary in nature. The Indonesian Accounting Standards

(PSAK) only require mining and forestry companies to disclose any material items related to environmental issues (Indonesian Accounting Standards No. 33 and 34, 1994).

Although similar in the concept, environmental disclosure is defined differently by different researchers according to the components of the disclosures. A performance oriented definition of environmental disclosure is given by Berthelot et al., (2003) as "the set of information items that relate to a firm's past, current and future environmental management activities and performance". According to this definition, environmental disclosure encompasses various items such as expenditures for pollution control equipment and facilities, rehabilitation and restoration costs, potential litigations, compliance status, environmental polices and management systems, and environmental audits

Somewhat different from the above definitions, Al-Tuwaijri et al (2003) define environmental disclosure as the disclosure of specific pollution measures and occurrences (toxic waste emissions, oil spills, Superfund sites, etc.) that an investor might find useful in estimating future cash flows. And unlike many studies in environmental disclosure, they exclude other positive environmental information (e.g. awards, commitments, rehabilitation, etc.). They argue to focus on the disclosure of cost drivers of future environmental costs and intentionally exclude the "greenwash" commonly found in annual financial reports.

Clarkson et al. (2006) divide environmental disclosures into two categories: hard and soft. This categorization is based on the quality of the information disclosed. Hard disclosures include: governance structure and management systems, credibility, environmental performance indicators and environmental spending. Soft disclosures include: vision and strategy, environmental profile, and environmental initiatives. Hard disclosures are considered to be higher quality because it is difficult for poor environmental performers to mimic the disclosures. Moreover, in that study they tested the theory of voluntary disclosure and excluded all mandatory disclosures by the sample firms.

Environmental disclosure may come internally from the companies themselves or provided by the external parties. These third parties may be the government agencies, non-government organizations or the media who publish the information regarding environmental performance or activities of particular company (ies). Corporations have used different types of media to disclose environmental information to their stakeholders. These include: the corporate annual reports, corporate websites, stand alone environmental reports, and press releases. This study focuses on environmental disclosures issued in corporate annual reports submitted and published through the stock exchange. The reason is that because corporate annual report probably represents the most important document in terms of the organization conveying a view of its operations to the public (Hines, 1988; Neimark, 1992) and is automatically sent to all shareholders (Adam, Hill and Roberts, 1998).

Information regarding corporate environmental performance may be issued to the stakeholders in different forms, such as environmental news by media, public documents by government agencies and NGOs (TRI, Environmental Performance Ratings, Pollution Propensity, ISO 14001, etc.). Companies may provide environmental disclosures voluntarily or because it is mandated by the regulations. In many countries the majority environmental

disclosures still rely on voluntary reporting.

In Indonesia, environmental disclosure is still considered voluntary, however, the Indonesian Accounting Standards (Pernyataan Standar Akuntansi Indonesia or PSAK) No. 32 and 33, require companies in mining and forestry sectors to disclose material information regarding their assets, liabilities and expenses in relation to their specific operations. For example, the mining companies are required to disclose site rehabilitation expenditures and oil reserves, and the forestry companies are required to disclose the value of their Commercial Forestry Concession and Fast-Wood Plantation, when the information is considered material.

As for the other sectors, there has been no specific requirement on environment reporting. The closest thing would be PSAK No. 8, in regards with contingencies and events after the balance sheet date. Indonesian firms are required to accrue or disclose future events that have the probability of taking place and resulting in a loss for the company. Such a situation can be found, for example, when the company is being sued for polluting the environment (Kurniawan et al., 2000).

Furthermore, the two standards (PSAK No. 32 and 33) are not supported by sufficient monitoring and enforcement by the regulatory institutions and therefore the effectiveness in improving the quality of environmental disclosure or financial reporting in general in Indonesia is still questionable. Considering that most environmental disclosures in Indonesia would be considered voluntary, this study will focus on voluntary environmental disclosures.

The results of this study show how the Indonesian corporate sector has responded to the PSAK No. 32 and 33. It reveals that more firms belong to sensitive industries (i.e. mining and forestry) under these accounting standards reports environmental information than those belong to less sensitive sectors (e.g. trading and services). This study also makes a significant contribution to environmental disclosure studies of emerging markets. Studies about environmental disclosure typically include only companies working in environmen-

tally sensitive industries, such as oil, chemical and manufacturing companies (Walden, 1993; Blacconiere and Patten, 1994; Hutchison, 1997; Hughes et al., 2001; Hutajulu, 2002). Given that environmental concerns now influence those in the least environmentally sensitive industries, such as banking and telecommunications, this study includes all types of industry. As such, it highlights the variation in environmental disclosures levels and types from the least to the most environmentally sensitive industry groups.

In this study, environmental disclosure is defined as any environmental information provided by the company in its annual reports. While the types of information are classified under certain category in the Environmental Disclosure index, this definition excludes environmental information provided by external parties or in any reports other than annual reports (e.g. company website, stand-alone environmental or social responsibility report, product display, pamphlets, etc.).

LITERATURE REVIEW

Firm Motivation for Voluntary Environmental Disclosures

The literature has extensively examined firms' incentives to disclose environmental information. Using Bansal's (2000) framework on green organizational response, the incentives can be classified into four categories: (1) regulatory requirements, (2) stakeholder pressures, (3) economic opportunities, and (4) ethical motives. The following sections discuss each of these categories.

Regulatory requirements

Regulations in environmental disclosure are aimed to alleviate information asymmetry problem between or among the parties in implicit or explicit contract. Firms are mandated to disclose certain (i.e., environmental) information so that the stakeholders can better assess the value and the risks of the firm accordingly. However, even in a regime where environmental disclosure is mandatory, managers still have the choice to substantively or symbolically comply.

All else equal, managers prefer to offer symbolic assurances rather than substantive action... constituents, of course, usually prefer the reverse (Ashforth and Gibbs, 1990, p.182).

A command and control structure is often needed to ensure that firms comply with the regulations. In the US, for example, Environmental Protection Agency) establishes behavioural standards and enforces compliance through punitive measures. Furthermore, local lobbying by (potentially) affected firms or the industry association may effectively undermine regulatory enforcement.

Stakeholder pressures

According to the stakeholder theory, corporations practising stakeholder management will be relatively successful in conventional performance terms (e.g., profitability, stability and growth) (Donaldson and Preston 1995). Mitchell (1994) describes stakeholder theory as an attempt to identify which groups are stakeholders deserving or requiring attention and which are not. Their influence in the corporation's survival is highly recognised in social theories that seek to explain why corporations undertake environmental initiatives. Stakeholders include customers, suppliers, employees, shareholders, competitors, regulators, community and other elements of society. By identifying each stakeholder group and its interests, management is able to respond to the issues that might affect its existence (Clarkson, 1995).

Stakeholder theory can be broken down into branches—the positive/managerial branch and the ethical/normative branch. The positive branch posits that organisations will respond to stakeholders asymmetrically, favouring the powerful or those who can have significant impact upon the organisation (O'Dwyer, 2002). From a managerial perspective, the focus of stakeholder theory is to gain approval for corporate decisions by groups whose support is required for the firm to achieve its objectives (Tricker, 1983). On the other hand, the ethical branch argues that 'all

stakeholders have the right to be treated fairly by an organisation, and that issues of stakeholder power are not directly relevant' (Deegan, 2000).

The economic opportunities

The economic perspective of voluntary disclosure has been long discussed in the literature. The theory suggests that firms will give "signal" to the market to differentiate themselves from their competitors. Numerous empirical studies in discretionary disclosure consistently suggest that companies have incentives to disclose "good news" in order to tell the audience that they are better "type" companies and to avoid the adverse selection problem (Verrecchia, 1983; Dye, 1985; Li, Richardson, and Thornton, 1997).

Consistent with this theory, studies in environmental disclosure context propose that firms with 'good news' concerning their environmental efforts would have incentives to include environmental disclosures in their financial reports. The absence of such disclosures could signal- a higher level of exposure to environmental risk and future regulatory costs (Blacconiere et al., 1994). This argument is supported by studies that find positive association between environmental disclosure and environmental performance (Al-Tuwaijri et al., 2004, Clarkson et al., 2006).

On the other hand, if greater disclosure provides information that may be used in litigation against the disclosing firm (presumably by third parties with political or social agendas), good environmental performers might elect to minimize such disclosure (Li et al., 1997). On the contrary, firms with poor environmental disclosure will disclose more good environmental information to mitigate the adverse effects of having poor performance. Note that the former is largely about bad news, while the latter is about good news. Studies in support to this argument found negative association between environmental disclosure and environmental performance.

Also in support with this argument, Patten et al. (2000) examined the market reaction of chemical firms other than Union Car-

bide following the catastrophe¹. Their finding indicates that firms with more extensive environmental disclosures in their financial report prior to the chemical leak experienced a less negative market reaction than firms with less extensive disclosures.

Yet, many studies failed to find significant relationship between the two variables 0. Many of these studies lend support from legitimacy theory and political cost theory, arguing that since firms operate within society, environmental disclosure prevents social and government sanctions. Accordingly, environmental disclosure will be used by firms to reduce adverse effects from poor environmental performance.

As a result, so far the findings from environmental disclosure literature are mixed. Some studies show positive (Al-Tuwaijri et al., 2004; Clarkson et al., 2005), negative (Patten, 2002) and no significant relationship (Wiseman, 1982, Walden, 1993). The more recent studies, attempt to identify the failure and propose improvements in theories, design, as well as methods to measure the environmental disclosure.

Patten (2002) points out that the mixed results are due to: (1) research design that do not include other control variables, (2) limited sample size, and (3) inaccurate measurement of environmental performance. His attempt to reduce the above problems is by using a larger sample of 131 US companies and using TRI (Toxic Release Inventory), instead of CEP (Council for Economic Performance) Index² to measure environmental performance. From this study, he finds that -environmental disclosure is negatively associated with environmental disclosure.

Al-Tuwaijri et al., (2004), on the other hand, argued that inconclusiveness is attributable to the fact that researchers have not considered simultaneous functions of economic performance to be jointly included in the equation. His studies on the relationship among environmental disclosure, environmental performance, and economic performance, resulted in a positive relationship, supporting the economic theory of discretionary disclo-

sure. They argue that, if we assume that good environmental performance reduces the firm's exposure to future environmental costs, disclosure of this information should be perceived as good news by investors. He also made a drastic change in the environmental disclosure index by excluding all positive information. He argues that these types of disclosure are merely corporate "greenwash" strategy. It is quite surprising that while using arguments based on the theory of discretionary disclosure, they exclude positive environmental information that presumably would be the larger part of discretionary disclosures.

However, the result is consistent with their proposition, most probably because of another unique feature used in the environmental disclosure index. The index is calculated by comparing the actual performance (i.e. using TRI Index) and the actual disclosure. The actual performance is used as the numerator, while the actual disclosure is used as the denominator. This way, poor environmental performers will score low in this particular index, and will even score lower if they disclose it.

Another attempt to improve the quality of the study is by done recently by Clarkson, Li, Richardson and Vasvari (2006). They argue that the inconsistency of the findings is due to the choice of non-discretionary disclosure channels and use of the disclosure index (i.e., Wiseman's or its modified index as the most commonly used index). They suggest to focus purely on voluntary disclosures in order to apply better the theories of discretionary disclosure. They also suggest the use an index based on Global Reporting Initiative (GRI) sustainability reporting guidelines to assess the extent of discretionary disclosure in environmental reports.

The above environmental disclosure studies are based on the disclosure quality, which means they put emphasis of measurement quality in developing and calculating the disclosure index, so that the true quality of the environmental information is properly measured. There are, however, studies that measure the environmental disclosure simply by the

quantity of environmental information. These studies use number of words, sentences, line, paragraphs, and even images to calculate the amount of environmental disclosures, without considering the importance of such information to users, neither if the information is repeated in different sections of the corporate reports.

Darrell (1982) is among those who use both quality and quantity in his study and interestingly found that there was no significant difference in both measurements. Note, however, that he used modified Wiseman's index that includes both voluntary and mandatory disclosure items.

Ethical Motives

While ethical motive has been recognized in management research, this is not the case of environmental accounting or reporting where environmental disclosure is more often viewed as a cost-benefit outcome. This type of study also requires a different method to perform (e.g. interviews) in order to be able to measure the ethical motive of the managers. This study will not focus on this motive.

Environmental Disclosures Studies in Indonesia

So far, there has been very little research on environmental disclosures in Indonesian context. Environmental disclosure in Indonesia is usually mentioned only as part of social or voluntary disclosures, either in a local context or in comparative studies involving other countries in the Asia/Pacific region (Williams, Yuniati, 2005, Craig, 1998, Januari et al., 2005; Saputro, 2003). As part of the social disclosure, the environmental disclosure indices used in these studies are typically involved a very short check list with 5 items by Machfoedz (1995): production control, research of industrial waste, energy conservation, natural conservation, and support to environmental conservation.

In Indonesia, the common social disclosures by listed companies are: (1) costs of environmental management in the prospectus, (2) welfare related expenses in annual reports,

(3) expenses related to services given to community the company in notes to financial reports and (4) product monitoring expenses in the notes to financial reports (Sueb, 2001 in Januarti et al., 2005). He further suggests that the variation in the types and media of social disclosures in Indonesia is attributed to the self-interests of the firm and the lack of accounting standards.

Environmental Visibility

Environmental Visibility is defined here as the visibility in environmental context. Visibility captures the extent to which phenomena can be seen or noticed by relevant constituents. Thus, environmentally visible firms are easier to be seen or observed and, therefore, are more vulnerable to external scrutiny. Environmentally visible firms are ideal target for political actions in environmental context undertaken by authorities, interested groups and other stakeholders.

Ingram and Simons (1995) argued that visibility is a good proxy for the extent of attention from regulators, the media, and the public. They found that organization's visibility positively affects its response to social or political issues. Bowen (2000) asserts that environmental visibility is a predictor of green organizational response. This is supported by the findings of his study and by extensive similar research in environmental management and strategy regarding triggers of green organizational response (e.g. Clemens, 1997; Henriques et al., 1996; Klassen, 1997; Rappaport et al., 1992).

Research in environmental reporting/disclosure is also in support with these studies. Environmental disclosure has been identified as management's response to environmental pressures given by relevant stake-

holders. Several empirical studies suggest that firms' decision to disclose environmental information is positively associated with firm size, industry sensitivity, media coverage, profitability, and other factors that refers to environmental visibility (e.g., Cormier et al., 2003; Hughes et al., 2000; Darrell, 1993; Guthrie and Parker, 1989; Barth et al., 1997; Hall, 2003; Bewly et al., 2000; Neu et al., 1998).

Beside environmental pressure, other terms have been used in numerous studies to refer to environmental visibility. Some of the terms are: political pressures (Blacconiere *et al.*, 1994), future regulatory costs public policy pressures (Darrell, 1997), prosecuted by environmental authority (Deegan et al., 1996), and exposure to public pressure (Cormier et al., 2001; Patten, 2002a and 2002b).

Bowen's (2000) is probably the first and only study that uses the term environmental visibility as the predictor for environmental strategies (e.g. charity and other activities) or environmental reporting/disclosure. She develops a matrix for environmental visibility from semi-structured interviews with 24 senior managers in the United Kingdom (see Table 1). She found that at corporate level³, environmental visibility can be divided into organizational and issue visibility. The former includes company size, name recognition, national/financial media coverage, advertising expenditure, prominent logo and number of customers, while the latter includes: environmental incident, corporate citizenship reputation and history of environmental reporting.

Bansal (1996 in Bowen, 2000) used the term "transparency of activities" to describe environmental visibility. Using an example of paint dust emission, she asserts that firms become transparent because of its activity (i.e. that causes dust emission).

Table 1: Bowen's Matrix for Environmental Visibility

	Organizational Visibility	Issue Visibility
Corporate Level	Cell 1 Size of corporation, etc.	Cell 4 Environmental incident, etc.
Operating Unit Level	Cell 2 Size of unit, etc.	Cell 3 Sensory visibility (smell, sound, touch), etc

Furthermore, she also argues that stakeholders are concerned more about the issue (i.e. dust emission issue), rather than the actual emission itself and therefore the issue affects other companies in the same industry. Similarly, environmental incident by one US chemical firm, Union Carbide in Bhopal, India, has affected the whole chemical industry in the US (Blacconiere et al., 1994; Patten, 2003). Another example, Exxon Valdez oil spill has affected the whole petroleum industry (Darell et al., 1993,1997). This "industry effect" has occurred because stakeholders are more concerned about the issue (i.e., the chemical leak and oil spill), rather than the actual incident itself. Brammer et al. (2006) also suggest that environmental and social issues are very visible issues and they greatly affect the industry. In addition to industry sector, other proxies for environmental visibility are discussed in the rest of his section.

HYPOTHESIS DEVELOPMENT

Firm size is probably the most commonly used proxy for firm visibility Guthrie and Parker, 1989; Darrell, 1993; Barth et al., 1997; Neu et al., 1998; Hughes et al., 2000; Bewley et al., 2000; Dormer et al., 2003; Hall, 2003). While size is widely known as a representative of firm visibility, it also represents firm capacity to be involved in social and environmental programs and to report such activities. Studies on the relationship between size and environmental responsiveness highlight organizational resources or organizational slack as the main alternative logic (Sharma, 1997; Aragon et al., 1998; Sharma and Nguan, 1999; Sharma et al., 1999; Bowen, 1999).

H1: the occurrence of environmental disclosures in Indonesian corporate annual reports is associated with firm size

Profitability is also used widely as a proxy to predict firm visibility in environmental context (Frost and Walden, 1993; and Neu et al., 1998). Similar to size, profitability in absolute terms also suffers from inherent weakness, because large firms usually have large amount of profit/loss in absolute terms.

In reducing the problem, researchers can use the ratios of profitability measures (e.g. ROA, ROI, ROE, and Profit Margin).

H2: the occurrence environmental disclosures in Indonesian corporate annual reports are associated with firm profitability

Industry type is also said as a weak proxy for firm visibility despite numerous researches using this element to predict green organizational responses. The argument is that, firms in the same industry usually have similar size and, therefore, industry bears similar limitation with size. In environmental context, however, industry prediction for firm visibility is very truthful, because different industry types create different level of environmental impacts. In fact, industry proxies environmental visibility better than size, as a very large firm may be environmentally invisible, if its impact to the environment is considered insignificant. Previous studies also use membership of environmentally sensitive industry as factor of environmental responsiveness (Patten, 1992; Lindblom, 1994; Deegan et al., 1996; Buhr, 1998; Tilt et al., 1999; Milne et al., 2002; Mobus, 2005).

H3: the occurrence of environmental disclosures in Indonesian corporate annual reports is associated with whether or not a firm is under environmental accounting standards (PSAK 32 and 33).

RESEARCH METHODOLOGY

Study Sample

The population of this study is 330 companies listed on Jakarta Stock Exchange in year 2002 (Indonesian Capital Market Directory, 2003). The annual reports are used as to measure whether or not firm disclose environmental information. The focus on environmental disclosures in corporate annual reports is because annual report represents probably the most important document in terms of the organization conveying a view of its operations to the public (Hines, 1988; Neimark, 1992) and is automatically sent to all shareholders (Hill and Roberts, 1998). Due to the difficulties in accessing the annual reports,

there were only 205 annual reports available for this study.

Out of 205, it is found that 66 annual reports of non-environmentally sensitive companies (e.g. banking, insurance, telecommunication, media, etc.) do not have any information regarding environmental issues. It is then decided to analyze only the remaining 139 annual reports of environmentally sensitive industries (e.g. chemical, forestry, mining, paper, etc.). Datastream is used to retrieve financial data (i.e. net income, total asset) used in the analysis.

Method of Analysis

Binary logistic regression is used to analyze whether or not corporate environmental disclosure is associated with firm environmental visibility, proxied by size, profitability and industry sector. Dummy variable is assigned to measure the occurrence of environmental disclosure, that is 1, if environmental information exists in the annual report, and 0, if it does not.

The definition of environmental disclosure used in this study is: any sentence in the annual report that discusses or mentions any aspect of the natural environment and/or its relationship with the organization, inclusive of any environment-related awards won or standard obtained" (Ahmed, et al., 2003). The industry sectors are classified whether or not the industry is under PSAK 32 and 33 or not,

and therefore another dummy variable is assigned to measure industry sector. The regression model derived from this study is:

$$ENVI_DISC = \alpha + \beta_1 Ln_ASSET + \beta_2 ROA + \beta_3 IND + e$$

Where:

ENVI_DISC : the occurrence of environmental information in the annual report (1= OCCUM, 0= does not occur)

Ln_ASSET : Natural Logarithm of Total Assets

ROA : Return on Asset

IND : Industry Sector (1 = under PSAK 32 or 33, 0= not under PSAK)

e : error term

RESULT AND ANALYSIS

As mentioned above, none of the firms from non-environmentally sensitive industry mentioned any information regarding environmental issues. Therefore, the analysis was only done to the environmentally sensitive companies. As we can see in Table 2, environmental disclosure has been done by 25% of the sample firms, with the highest number coming from mining industry (100%), followed by forestry and beverages companies, whereas the agriculture/husbandry, real estate and other manufacturing industries have the lowest number of firms disclosing environmental information.

Tabel 2: Environmental disclosures by environmentally sensitive companies in Indonesian corporate annual reports 2002

Industry	Disclosers	Non Discloser	Total	% of disclosers
Agriculture and husbandry	1	3	4	25%
Automotive & metal product	8	14	22	36%
Chemical, plastic & cement	8	14	22	36%
Food & beverages	6	11	17	35%
Forestry and Paper allied*)	a	2	10	80%
Mining *)	6	0	6	100%
Real estate & Property	7	22	29	24%
Textile and allied	2	5	7	29%
Other Manufacturing	4	13	17	24%
Total	50	84	134	25%

*) industries under PSAK No. 32 and 33, 1994.

The two industries having the highest number of disclosers, mining and forestry, are under PSAK 32 and 33, and therefore it is not surprising to find out from the binary logistic analysis that environmental disclosure is significantly associated with whether or not the industry is under PSAK. Nonetheless, we would still like to see whether the other measures of environmental visibility, firm size and profitability, are also significantly associated with environmental disclosure.

An independent t-test was performed to find out whether there is a difference between the two groups, disclosers and non-disclosers. This test was done to the variables size (Total Assets) and profitability (Return on Assets or ROA). The Mann Whitney U test

was performed to the variable industry. The results can be seen in Table 3. On the other hand, Table 4 provides the group statistic of this study.

Subsequently, the binary logistic regression was performed to find out whether the three variables are associated with environmental disclosure. As we can see from Table 5 the accuracy of the model is 73.1%.

It can be concluded from the binary logistic regression in Table 5 that Hypotheses 1 and 3 are accepted, whereas Hypothesis 2 can not be accepted. These results are consistent with the previous literature that environmental disclosure is associated with firm size and industry type, but not with profitability and 3 are accepted.

Table 3: Tests of differences (Sample T-test and Mann Whitney U test)

Variables	Significance	Alternative Hypotheses
LN_ASSET	0.002	Accepted
ROA	0.348	Rejected
Industry	0.000	Accepted

Table 4: Group Statistics

Variables	ENVI DIS	N	Mean	Std. Deviation	Std. Error Mean
LN_ASSET	0.00	84	8.5907	0.5708	0.0622
	1.00	50	8.9358	0.6858	0.0969
ROA	0.00	84	0.0520	0.1204	0.0131
	1.00	50	0.0275	0.1801	0.0254
IND	0.00	84	0.0238	0.1533	0.0167
	1.00	50	0.2800	0.4535	0.0641

Table 5: Model Summary

	Measured values	Results
-2 LL Block Number	2 LL Block Number 0	162.207
	-2 LL Block Number 1	150.327
Cox & Snell R Square		0.181
Nagelkerke R Square		0.247
Hosmer & Lemeshow Test	Chi-Square	11.880
	Df	8
	Sig	0.157
% of accuracy		73.1%

Table 6: Results of Binary Logistic Regression

Independent variables	Expected relationship	Coefficient	Wald Statistic	p-value
Constant	?	-7.799	6.880	0.009
Ln_Asset	+	0.809	5.667	0.017
ROA	+	-1.821	1.630	0.202
Indust	+	0.795	10.214	0.001

There is a longstanding debate in the literature about the relationship between profitability and environmental initiatives or disclosures. Those who maintain a positive relationship between the two suggest that firms with better financial performance are more capable of carrying out environmental programs and investments. This point is supported by consistent findings (Leary, 2003; Al-Tuwaijri et al., 2004). Opponents, however, argue that such environmental initiatives are costly and, therefore, will negatively affect firms' financial performance (Shane, 1983; Stevens 1984; Richardson and Welker, 2001). Others have found insufficient evidence to reject the null hypothesis that there is no relationship (Freedman and Jaggi, 1982; Walden 1993; Clarkson, 1995; Hackston & Milne, 1996; Walden, 1997; Frost, 1999). In accordance with the argument that better financial performers are more environmentally visible, firms with higher profit disclose more environmental information to offset pressures from the public. However, the findings from studies of the relationship between profitability and environmental disclosure have been mixed (Hackston & Milne, 1996; Balabanis et al., 1998; Stanwick & Stanwick, 1998; Gray et al., 2001; Leary, 2003; Al-Tuwaijri et al., 2004). This study also finds that profitability is not significantly associated with environmental disclosures.

CONCLUSION, LIMITATION AND FURTHER RESEARCH

The results of this study show consistency with the previous literature, that environmental disclosure is associated with firm environmental visibility, measured by firm size and industry type, but not with profitability. The industries under environmental accounting standards (PSAK 32 and 33) have more firms disclosing environmental issues as compared to other firms.

This study measures environmental disclosure only by the occurrence of environmental information in the corporate annual reports and therefore, a more rigorous study should be able to measure the level of envi-

ronmental disclosure using a more proper content analysis (Ingram et al., 1980; Wiseman, 1982; Freedman et al., 1990; Blacconiere et al., 1995).

Furthermore, this preliminary study limits its model by using only three independent variables. Considering many previous studies on environmental disclosures, more control variables should be included in the empirical model to find out other factors influencing firms to disclose environmental information in their annual reports. Therefore, future research should include more variables as proxies for environmental visibility and expand the method of analysis using an environmental disclosure index for a rigorous measure of the independent variable.

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¹ Union Carbide's chemical leak in Bhopal, India during December 1984 resulted in approximately 4,000 deaths and 200,000 injuries.

² The difference between TRI and CEP

³ She also discusses environmental visibility at operating unit level, which is beyond the topic of this paper. For a complete typology and examples of environmental visibility, please refer to her paper