

The Quantity and Quality of Environmental Reporting in Annual Report of Public Listed Companies in Malaysia

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Abstract

Business organisations are facing the challenge of disseminating environmental information as the public concerns regarding these issues have increased. This study examines the environmental reporting practices in the annual reports of 243 companies listed on the Main Board of Bursa Malaysia for the year 2005. Content analysis approach was utilized to determine the quantity and quality of the environmental information disclosure in annual reports. The results indicated that only 28% of the companies reported this information in their annual reports and merely five sentences were dedicated for these reports. It was also revealed that the average quality of environmental reporting per company is 3.24%. In addition, it was discovered that larger companies and companies in environmentally sensitive areas published more information as well as provided higher quality disclosure. Additionally, it was also revealed that companies with high level of quantity environmental reporting are also having high level of quality environmental reporting.

Keywords: *environmental reporting, annual report, Public Listed Companies, Malaysia*

1. Introduction

In the recent years, environmental issues have captured the public's interest as well as business organisations. The growing concern has increased business organisations' awareness about the importance of disseminating environmental information. This is because they real-

ize that they had to play a role in the area as the public's interest in the issues has proliferated tremendously over the years. Thus, business organisation uses the environmental reporting as a vehicle to enforce the values of environmental concern to their stakeholders.

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It was found that prior studies tend to focus on examining the extent and type of disclosures (Guthrie et al, 2008). However, there has been lack of that specifically assessed the quality of environmental disclosure practices. Furthermore, research on this matter has largely focused on developments in industrialised countries and very few studies have been done in developing country. According to (Tsang, 1998) the stage of a country's economic development may be an important influential factor that forms corporate social and environmental reporting practices. As such, it may not be suitable to generalize the findings of studies conducted in the industrialised countries with less developed countries. Thus, this study extends the current literature by assessing the quality of environmental reporting practices by the companies in Malaysia using systematic disclosure index.

This study may offer several significant contributions. First, this study will provide some descriptive data on the extent of environmental information disclose in annual report of Malaysian companies. Second, the methodology used in this study is content analysis approach which can be defined as a systematic, objective, quantitative analysis of message characteristics (Neuendorf, 2002). Third, examination of the environmental information quality index will provide the assessment of the quality reporting among public listed companies in Malaysia.

The main objective of this study is to examine the environmental reporting practices among public listed companies in Malaysia based on quantity and quality of environmental information disclosure in the corporate annual report.

Within this broad area, the study has two specific objectives. First, the study aims to investigate if there is any relationship between the quantity and quality of environmental reporting and size of companies. Second, the study attempts to identify if there is any relationship between the quantity and quality of environmental reporting and environmental sensitivity.

This paper is organised as follows. The next section, 2.0 presents a literature review on environmental reporting. Next, section 3.0 is a description of conceptual framework and hypotheses development followed by Section 4.0, the methodology used for the study. The following section is 5.0, the discussion on findings and lastly, Section 6.0 is the overall conclusion.

2. Literature Review

2.1 Environmental Reporting Development

Environmental reporting is a voluntary initiative in Malaysia and has only emerged in the last decade or so. However, there are several reporting recommendations and guidelines, with direct and indirect reference to environmental information have been issued. These include the financial reporting standards (FRSs) by the Malaysian Accounting Standards Board (MASB), the Malaysian Code on Corporate Governance (MCCG), and the Association of Chartered Certified Accountant's (ACCA) Environmental Reporting Guidelines. Paragraph 10 of FRS 101 – *Presentation of Financial Statements* encourages business entities to prepare environmental reports to supplement the financial statements. Meanwhile, FRS 137 –

Provisions, Contingent Liabilities and Contingent Assets which was issued in 2001 provides explicit examples on environmental contingent liabilities in the Appendix 4 of such standard.

Additionally, the Finance Committee on Corporate Governance (FCCG) of the Securities Commission introduced the MCCG in 2000. Part 2 of the Code identifies a set of guidelines or practices intended to assist companies in designing their approach to corporate governance (FCCG, 2000). Paragraph XVII of this part suggests that the board of directors seek and assess information that goes beyond financial performance of the company, including environmental performance. Moreover, the ACCA with the collaboration of the Malaysian Department of Environment (DOE) published the “*Environmental Reporting Guidelines for Malaysian Companies*” in March, 2003. This explains what environmental reporting is and provides an overview of its evolution over the last 12 years.

2.2 Factors That Influence the Environmental Information Disclosure

Environmental information is necessary and important in decision making process in order to value any effects and risk from the environmental issues. Epstein and Freedman (1994) found that the investors requested for several social information that need to be disclosed including environmental information. Additionally, researchers found that social and environmental information are important to the users in making investment decision (Tilt, 1994).

Companies are responsible to disseminate information to the stakeholders

(Gray *et al.* 1995). Environmental reporting provided by the companies will benefit the companies itself (O’Dwyer, 2001) in order to justify social values of the companies, decrease the pressure from pressure group, build companies’ image and show the companies’ social responsibility (O’Donovan, 2002). A study by Romlah and Sharifah (2004) found that image building is the main factor that influence company to disclose environmental information (Deegan and Gordon 1996; O’Dwyer, 2001).

Sumiani *et al.* (2007) found that the ISO 14001 certification has put some pressure upon the companies to include some form of environmental reporting, specifically under the categories of pollution abatement and other environmentally related information.

2.3 Environmental Reporting Medium

Most of the previous studies reviewed and assessed environmental disclosures from corporate annual report. There are several reasons for using annual report as the main source of data for analysis. First, annual report is the main document prepared by companies (Gray and Bebbington, 2000). Second, companies used annual report as the main communication tool to disseminate information which includes environmental information (Gray *et al.* 1995). Third, in Malaysia, annual reports of listed companies are the most accessible source of information (Haslinda *et al.*, 2004).

There are several other media that can be used to disclose environmental information such as corporate environmental reports, projects report, bulletin, newspaper and electronic media (ACCA,

2003). Montabon *et al.* (2007) gathered environmental information from corporate environmental report from the web site. The researchers believed that corporate environmental report is a logical choice of data source as it contains the information needed and are relatively easy to obtain. While a study by Clarkson (2007) focus on purely voluntary disclosure media only such as corporate Internet web sites and stand alone environmental reports.

2.4 Environmental Information Measurement

There are several measurements that have been used in previous studies. They are measurement by number of words (Zeghal and Ahmed, 1990; Deegan and Gordon, 1996), sentences (Tsang, 1998; Milne and Adler, 1999; Nik Nazli and Maliah, 2004) and pages (Gray *et al.*, 1995; Romlah *et al.*, 2002). These measurements merely consider the quantitative of the environmental information disclosed.

The literature revealed that there are different methods used to measure and assess quality of environmental information disclosure. However, most prior studies used specific environmental themes or categories to measure and assess the quality of environmental reporting. Gray *et al.* (1995) used four broad themes, statements of environmental policy, product and service, sustainability activities and audit. Study by Romlah *et al.* (2002) assign 1 to 3 scores for three types of reporting; 1 for general reporting, 2 for quantitative-non-monetary and 3 for quantitative-monetary reporting. The measurement is also based on different scores from 1 to 5 for 9 different locations. This can be

justified that certain locations are more likely to be read, audited or indicate the important fact attached to the issue being reported.

A study by Sumiani *et al.* (2007) measures environmental information according to 24 items which was grouped into six categories, namely, financial factors, litigation, pollution abatement, environmental preservation, other related information and environmental initiatives. Levels of extensiveness for each of the information's parameters are measured according to five categories namely, non-disclosure, general, qualitative/narrative, quantitative and combination of types of information.

While a study by Clarkson (2007) considered seven broad categories of disclosure index which represent hard and soft environmental disclosures. The hard disclosure items are Governance structure and management system, credibility, environmental performance indicators, environmental spending.

Another identification of the environmental information is according to six items which is categorised using the five point Likert scale with 1 representing a low intensity and 5 representing a high intensity of involvement. The items are recycling, proactive waste reduction, remanufacturing, environmental design, specific design targets and surveillance of the market for environmental issues (Montabon *et al.*, 2007)

3. Conceptual Framework and Hypotheses Development

3.1 Legitimacy Theory

Legitimacy theory justifies the concept

and practice of environmental reporting by companies. This theory suggests that companies can operate when the value practice by company is congruent with the value of the society (Milne and Patten, 2002). Consequently, the company's focus has to comply with the culture, legal, cost and risk value of society. Recent scenario revealed that there is an increased of societal concern and awareness of the environmental impacts of business organization on society. Legiti-

macy theory suggests that the organisation will act to ensure that their activities are recognized by society. Therefore, the company will provide information regarding its operation to society including environmental information (Deegan and Gordon, 1996) using environmental reporting in order to gain support and maintain a good image (O'Donovan, 2002) so that they will be acknowledged by the society.

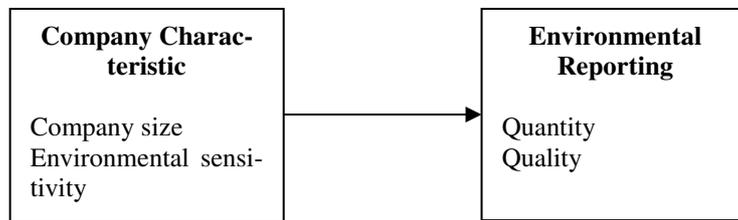


Figure 1: Research Model

3.2 Research Model

Figure 1 depicts the conceptual framework of the study which is completed with the quantity and quality of environmental reporting as the dependent variable. The independent variables are company size and environmental sensitivity.

3.3 Hypotheses Development

Total assets are frequently used as an indicator to measure company size (Romlah *et al.*, 2002; Zauwiyah *et al.*, 2003; Cormier and Magnan, 2003; Mahmud *et al.*, 1994) suggested that big and listed companies tend to disclose more information than required by standards in order to maintain their shares demand. Additionally, non-disclosure may be interpreted as 'bad news' which could

produce an adverse effect to the firm's value. Previous study found a positive association between size and voluntary social responsibility disclosures (Trotman and Bradley, 1981). Consistent with legitimacy theory, a company that is visible in public is more likely to disclose information in order to enhance their corporate image. Fulfilling the proposition of legitimacy theory and previous study, we hypothesise that:

H_{1a}: There is a significant relationship between company's size and the quantity of environmental reporting.

H_{1b}: There is a significant relationship between company's size and the quality of environmental reporting.

Environmental sensitivity is based on the industry of the companies in which

they operate. The different way each company operates is one of the factors that influence corporate social reporting (Gray *et al.* 1995). Companies that operate in the industries with higher impact on environment tend to disclose the environmental information. Chemical, mining, gas and petroleum, transportation, tourism, manufacturing, construction and food industries are among industries which are very sensitive to the environment (Halme and Huse, 1996; Wilmshurst and Frost, 2000; Romlah *et al.*, 2002; Haslinda *et al.*, 2004). Therefore, it is reasonable to come out with the following hypotheses:

H_{2a}: There is a significant relationship between environmental sensitivity and the quantity of environmental reporting.

H_{2b}: There is a significant relationship between environmental sensitivity and the quality of environmental reporting.

4. Methodology

4.1 Sample and Data Collection

The population of this study is all the public companies listed on the Main Board of the Bursa Malaysia as of 31 December 2005 except financial companies. All financial firms are excluded as these sectors are additionally governed by certain rules and procedures from regulatory bodies such as BNM and Ministry of Finance. Furthermore, the operation of these companies is deemed to have less impact to the environment (Wilmshurst and Frost, 2000) and as such increase the likelihood of non-reporting incidence (ACCA, 2004; Zauwiyah *et al.*, 2003).

The final sample consists of 243 compa-

nies randomly selected using the random number generator available in Excel. This represents 41 percent of the remaining population and thus consistent with the minimum sample size as suggested by Field (2000). Data is extracted using the content analysis method from the annual reports of these companies for the year 2005.

4.2 Content Analysis

Neuendorf (2002) defined content analysis as the systematic, objective, quantitative analysis of message characteristics. This method is chosen as the most suitable method to explore the environmental information in the annual report. The procedures involve three steps. First, the document was scrutinised to check if any environmental information exist. (Appendix 1). Second, identifies and count the number of sentences of environmental information. Third, assign disclosure score (Appendix 2) based on the sentences identified earlier.

4.3 Dependent Variables

Quantity is measured based on number of sentences. Environmental information is describe as “the impact company activities have on the physical or natural environment in which they operate” (Wilmshurst and Frost, 2000). Further definition of environmental information is presented in Appendix 1. Subsequently, we utilise the number of sentences since it can be used to convey meaning and thus, are likely to provide more reliable measures (Hackston and Milne, 1996). It also reduces the degree of subjectivity in interpreting the environmental information disclosed (Milne and Adler, 1999). Additionally, Hackston and Milne (1996) found a high cor-

relation between sentences, words and pages. Hence, the results should not be greatly influenced by the choice of sentences, instead of words, or proportion of pages.

Quality is based on the disclosure index developed by Bakhtiar (2005). This index was developed based on a review of various scoring systems including the adjudication criteria used in the Association of Chartered Certified Accountants' Malaysian Environmental and Social Reporting Awards (ACCA's MESRA) and the National Annual Corporate Report Awards on Environmental Reporting (NACRA-ER). The index has 100 disclosure items which are categorised into 14 categories. Due to some perceived redundancies in the items, 6 of the items were removed, leaving only 94 items that was utilised in this study (see Appendix 2 for the disclosure index). Each item is awarded "1" if it is disclosed (or meet the requirements), while non-disclosure is assigned "0".

4.4 Independent Variables

Company size and industrial classification are proxies for the amount of public pressure, while at the same time, these two variables are consistently found to be related to the level and extent of disclosure (Cormier and Magnan, 2003). Size is measured by total assets. Previous studies that used total assets as a proxy for size include Romlah *et al.*, 2002; Zauwiyah *et al.*, 2003; Cormier and Magnan, 2003.

Meanwhile, as for industry, the companies are divided into two: high environmentally sensitive and low environmentally sensitive. This involves reviewing the works of previous researchers

(Wilmshurst and Frost, 2000) and also a report issued by the Department of Environment, Malaysia (DOE, 2002). Thus, companies involved in the following operations which are regarded as high environmentally sensitive encompass mining, chemicals, transportation, oil and gas, wood and timber, utilities, agricultural, construction and properties, and manufacturing. For diversified companies, they are classified as high environmentally sensitive if 51 percent of their revenue is derived from these nine operations (Lemon and Cahan, 1997).

4.5 Data Analysis

Linear regression is used to test the relationship between the quantity and quality of environmental reporting as well as company size and environmental sensitivity. The assumptions underlying regression model are tested for multicollinearity based on the correlation matrix. Multicollinearity problem exists when the coefficient correlation between two variables is greater than 0.80 (Field, 2000). Normality tests based on Kolmogorov-Smirnov (K-S) test is also conducted with significance level of less than 0.05 indicates that the distribution of the data is not normal (De Vaus, 2002). All these analyses are performed using SPSS 15.0 for Windows software.

5. Findings

5.1 Reporting Companies

Table 1 depicts the distribution of companies according to Bursa Malaysia's industrial classification. These companies are the representatives of various sectors, with considerable numbers are from industrial products sector (30%), followed by trading/services sector

(22%) and properties sector (19%). None of the companies is from the mining sector and in fact, there is only one company from that sector was listed on

the Board as of the cut-off date. Since the sample selection method is based on the random-sampling, such exclusion is considered as insignificant.

Table 1. Distribution of companies according to industrial sector

No	Industry	Number	%
1	Industrial Products	73	30
2	Trading/Services	53	22
3	Properties	47	19
4	Consumer Products	28	12
5	Construction	17	7
6	Plantation	14	6
7	Technology	7	3
8	Infrastructure Project Companies	2	1
9	Hotel	1	0
10	Trust	1	0
Total		243	100

Table 2 presents the findings on the number of reporting companies. Overall, there are only 68 companies (28%) reported some form of environmental information in the annual report year 2005. Sectors with high number of reporting incidences include industrial products (28%), trading/services (28%), properties (15%) and plantation (12%). However, if the reporting practice is analyzed on a per industry basis, it is found that the plantation sector has the highest number of reporting incidence (57%) as compared to other industrial sectors.

5.2 Analysis of Quantity and Quality of Environmental Reporting

Table 3 presents the findings on the *quantity* and *quality* of the environ-

mental information reported by the sample companies according to the industry. Overall, total environmental sentences disclosed is 1,142 with the highest number of sentences reported by a company is 246. Thus, on average, each company disclosed 4.70 sentences on environmental information. Meanwhile, the highest disclosure score is reported to be 54.26% and the average for each company is 3.24%. These findings suggest that the environmental reporting in Malaysia is still at infancy stage.

Based on the industry analysis, three industries with the highest average environmental sentences are infrastructure project companies (55.50 sentences), plantation (25.86 sentences) and industrial products (4.19 sentences). The result for *quality* is consistent with the re-

Table 2. Reporting companies according to industry

No	Industry	Number	Per sample (%)*
1	Industrial Products	19	28
2	Trading/Services	19	28
3	Properties	10	15
4	Consumer Products	6	9
5	Construction	4	6
6	Plantation	8	12
7	Technology	1	1
8	Infrastructure Project	1	1
9	Hotel	0	0
10	Trusts	0	0
Total		68	100

Table 3. Quantity and Quality Score of environmental reporting

	Industry	Sentences		Disclosure Index	
		Sum	Ave./Ind.*	Sum	Ave./ Ind.*
1	Industrial Products	306	4.19	232.96	3.19
2	Trading/Services	176	3.32	184.26	3.48
3	Properties	110	2.34	107.43	2.29
4	Consumer Products	33	1.18	30.85	1.10
5	Construction	43	2.53	45.75	2.69
6	Plantation	362	25.86	141.46	10.10
7	Technology	1	0.14	6.38	0.91
8	Infrastructure Project	111	55.50	37.23	18.62
9	Hotel	0	0.00	0	0.00
10	Trusts	0	0.00	0	0.00
	Total	1142	4.70**	786.32	3.24**

*Total sentences (disclosure score) reported (obtained) by each industry divided by total number of companies in each industry

**Total sentences (disclosure score) divided by sample

sult for *quantity*, with the exception of the third highest scoring industry that is trading/services. However, this should be interpreted with caution since the infrastructure project companies industry is represented by only 2 companies in the sample. Moreover, a closer look on the result suggests that the company with highest *quantity* is from the plantation industry while the highest for *qual-*

ity is from the industrial products industry.

5.3 Descriptive analysis

59 companies (24%) are classified as high environmentally sensitive. The descriptive statistics of the *quantity* and *quality* of environmental information are depicted in the following table, Table 4.

Table 4: Descriptive statistics for the dependent and continuous variables

	Quantity	Quality	Total Assets
Mean	4.700	3.236	1608611363
Std. Dev.	19.766	7.863	5258385837
Min.	0.000	0.000	1697524
Max.	246.000	54.260	63438200000
Skewness	8.844	3.380	8.776
Kurtosis	96.735	13.412	90.889
K-S test	6.329*	5.921*	5.923*

* Significance at 0.01; K-S with significance <.05, hence data not normally distributed

Total assets variable is not normally distributed as indicated by the non-parametric Komolgorov-Smirnov normality test. Generally, significance level of less than 0.05 indicates non-normality (De Vaus, 2002). Therefore, the variables are transformed to normal scores before conducting the regression analysis since one of the requirements of linear regression is for the data to be normally distributed (Field, 2000).

5.4 Regression analysis

Prior to performing the regression analysis, sensitivity analysis is conducted to assess the stability of the results. The linear regression is run using dependent variable and continuous variables which

is transformed using natural log. The result is presented in Table 5 and 6. Table 5 depicts results base on number of sentences (*Quantity*) as the dependent variable. While in Table 6 results based on quality of disclosure as the dependent variable. In Table 5, the value of R^2 is 0.098 which indicates that the variables used in the study account for 9.8% of the variability in the extent of environmental reporting. More importantly, the model is significant at 0.01 level with F-ratio of 14.163. In Table 6, the value of R^2 is 0.103 which indicates that the variables used in the study account for 10.3% of the variability in the quality of environmental information disclosure and the model is significant at 0.01 level with F-ratio of 14.946.

Table 5. Regression results using quantity of disclosure as the dependent variable

Variables	Coefficient value	t-statistic	Sig t
Intercept	-3.288	-5.085	.000
Σ Assets	.160	2.076	.000
<i>EnvSen</i>	.221	5.046	.039
$R^2 = .098, F\text{-statistic} = 14.163, p = .000$			

Table 6. Regression results using quality of disclosure as the dependent variable

Variables	Coefficient value	t-statistic	Sig t
Intercept	-3.364	-5.218	.000
Σ Assets	.230	2.173	.000
<i>EnvSen</i>	.163	5.170	.031
$R^2 = .103, F\text{-statistic} = 14.946, p = .000$			

As expected, there is a positive and significant relationship between the quantity and quality of environmental reporting and *company size* and *environmental sensitivity*. The result revealed that bigger companies have higher volume and *quality* of environmental information disclosed in the annual report. This is consistent with the findings of Halme and Huse (1997); Cormier and Gordon (2001); Romlah *et al.* (2002); and Cormier and Magnan (2003). According to Cormier and Gordon (2001), larger company is more visible and accountable to the public. Therefore, they are more accountable with respect to environmental issues. In that case, larger company will disclose more environmental issue to decrease public pressure.

Furthermore, the results of the study is also consistent with the findings of study by Romlah *et al.* (2002) and Zauwiyah *et al.* (2003) which indicate that companies that are environmentally sensitive have to provide higher volume of environmental information in annual reports.

Legitimacy theory suggests that companies with higher environmental sensitive report the information in order to minimise the potential political cost that may be imposed to the companies in the future.

Correlation tests are performed using both Pearson (for normalized data) and Spearman's rank correlation analyses (for non-normalized data). Both tests showed high correlation between the two dependent variables (Pearson = .988; Spearman = .996) and the correlation is significant at 0.01 level. This indicates that companies with greater amount of environmental information disclosed higher quality information.

5.3 Quality Assessment by item of Environmental Information

Appendix 2 summarises the analysis of the quality score for each environmental disclosure items. The most reported item (32 cases) is under the environmental policy. Based on the sub item of envi-

ronmental policy, it can be concluded as general information because the sub item only consider any statement about the policy adoption, set of environmental goals and objectives which only at minimum statement.

The result is consistent with the previous studies (Romlah *et al.*, 2002; Nik Nazli and Maliah, 2004) which indicates that the majority of the companies reported environmental information in form of general statements. Sumiani *et al.* (2007) found that only four out of 24 environmental information items; namely control, installation and process, environmental regulations, environmental policies and environmental management system were reported by more than 50% of ISO companies in the sample that was studied.

While, items that are reported at above average (>8 cases) are Environmental Management System (EMS), Chairman or CEO statement, Targets and Achievements, Compliance/Non-compliance and Environmental Impacts, Corporate Context, Corporate Commitment, Research and development, Stakeholder Engagement and other initiatives, Awards and Report Design. The result also revealed that there are 16 companies which use a separate environmental section in the annual report.

There is only one company that reported about third party verification. However, the statement is not clearly stated. Other items which were reported at below the average (< 8 cases) are financial data and performance data. This is consistent with the previous findings which revealed that monetary/financial quantification of environmental information is minimal (Romlah *et al.*, 2002; Nik Nazli

and Maliah, 2004). The findings also support the study by Sumiani *et al.* (2007) which discovered that financial factors and litigations were not reported at all by any ISO certified companies. The study found that the least environmental information element reported were land rehabilitation and remediation, environmental memberships/relationships and environmental stakeholder engagement.

6. Conclusions

This study examines the *quantity* and *quality* of environmental reporting among Malaysian companies. Overall, this study concludes that environmental reporting practice in Malaysia is still low. The average of environmental sentences disclosed in the annual report for the year 2005 is 4.70 sentences, while the average *quality* of the reported information by a company is as low as 3.24%. Additionally, the study found that there is a positive and significant relationship between the quantity and quality of environmental reporting and *company size* and *environmental sensitivity*. The result indicated that larger companies have higher *quantity* and *quality* of environmental information disclosed in the annual report. Meanwhile, in term of disclosure item, the study revealed that the most reported item (32 cases) is under the environmental policy. Based on the sub item of environmental policy, it can be concluded as general information because the sub item only consider any statement about the policy adoption, set of environmental goals and objectives.

The findings of the study should be interpreted in light of several limitations.

Firstly, only one year of data is considered in the current study. Hence, it would be interesting to conduct a longitudinal study on yearly basis as it may help to trace the trend of environmental disclosure. Secondly, the study focuses merely on the *quantity* and *quality* of environmental reporting. It would be beneficial to look into the nature and to measure companies' environmental performance.

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Appendix 1
Definition of environmental reporting

No	Areas	Items
1	General environmental considerations (environmental pollution) [¶]	<ul style="list-style-type: none"> • Statement of the corporation's business operations on environmental pollution pertaining to noise, air, water and visual quality • Statements indicating that the company's operations are non-polluting or that they are in compliance with pollution laws and regulations[§] • Recognition of the need to comply with society standards and regulations[¶] • Statement of the capital, operating, and research and development expenditures and activities of the environmental pollution produced by the firm with respect to noise, air, water and visual quality
2	Environmental policy	<ul style="list-style-type: none"> • Actual statement of policy • Statement of formal intentions • Statements indicating that company will undertake certain measures to curb environmental pollution and other such damage or what the company does
3	Environmental audit	<ul style="list-style-type: none"> • Reference to environmental review, scoping, audit, assessment including independent attestation
4	Environmental – product and process related	<ul style="list-style-type: none"> • Waste(s)–including preventing waste; efficiently using material resources in the manufacturing processes[§] • Packaging • Recycling–including using (or researching)[¶] recycled materials[§]; conservation of natural resources e.g. recycling glass, metals, oil, water and paper[§] • Products and product development • Land contamination and mediation – including prevention or repair damage to the environment resulting from processing of natural resources e.g. land reclamation or reforestation[§]
5	Environmental financially related data	<ul style="list-style-type: none"> • Reference to financial/economic impact • Investment and investment appraisal • Discussion of areas with financial/economic impact • Discussion of environmental-economic interaction

Appendix 1 (continued)

6	Sustainability	<ul style="list-style-type: none"> • Any mention of sustainability • Any mention of sustainable development
7	Environmental Aesthetics	<ul style="list-style-type: none"> • Designing facilities harmonious with the environment • Contributions in terms of cash or <i>plants/flowers</i> to beautify the environment • <i>Natural</i> landscaping
8	Environmental – Other	<ul style="list-style-type: none"> • Involvement in schemes • Undertaking environmental impact studies to monitor the company's impact on the environment—including conducting review of performanceⁱ employing specialist consultants^v • Receiving awards related to programs or policies of company • Protection of the environment • Environmental education—including training employees in environmental issues[§] • Wildlife conservation[§] • Supporting <i>environmental</i> campaigns[§]
9	Energy	<ul style="list-style-type: none"> • Conservation of energy in the conduct of business operations • Using energy more efficiently during the manufacturing process • Utilising waste materials for energy production • Disclosing energy savings resulting from product recycling • Discussing the company's efforts to reduce energy consumption • Disclosing increased energy efficiency of products • Research aimed at improving energy efficiency of products • Receiving an award for an energy conservation program • Voicing the company's concern about the energy shortage • Disclosing the company's energy policies

Sources: Hackston and Milne (1996)

Appendix 2

DISCLOSURE ITEM	Total Cases/ Reporting companies (68)
Scoring Sheet	
1 Corporate context	
a. Graphical description of products and/or services	12
b. Identification of the boundary of the report	
Environmental information is provided for each major business operations	16
Environmental performance of other related parties is included	2
2 Corporate commitment	
a. Vision and mission	
Vision statement of the organization mentions anything on environment	4
Mission statement of the organization mentions anything on environment	12
b. Chairman/CEO Statement	
Environmental issues are mentioned in the statement	21
Highlights the commitment by the organization's leadership to environmental issues and objectives	25
Highlights the achievement in the current period -include both success and failure	9
Identifies issues and challenges facing the organization	4
Future environmental strategy	6
3 Environmental policy	
a. The company adopts internally developed environmental policy or indication that any publicly established charter is being subscribed by the company	32
b. There is a set of environmental goals and objectives	21
c. The environmental goals and objectives should, at a minimum, state a commitment to:	
Materials, water and energy conservation	23
Waste, emissions and discharges management	23
Continuous process improvement and monitoring	30
Supplier chain and/or product stewardship	16
Compliance with environmental laws and regulations	29
Biodiversity maintenance and conservation	20
Stakeholders relation management	13
Environmental performance reporting	10
Recognition of the improved performance	3
4 Targets and achievements	
a. There are specific environmental targets to be achieved	23
b. The target have covered major environmental issues	14

Appendix 2 (continued)

c. Achievement (or progress) against targets are indicated	18
d. Reasons for any non-achievement of those targets	0
e. Associated remedial or preventive actions	1
5 Environmental management systems	
a. The organization has an environmental management system, or planning (and status) of implementation	27
b. There are members of the board, division or department responsible for environmental management	12
c. The division/department is responsible on the whole environmental issues in the company	5
d. Identification of the key managerial responsibilities for various aspects of the system which includes:	1
Contingency planning and risk management	6
Internal audit and review	10
Environmental impact assessment	8
d. The environmental management system is externally certified or planned (and expected date) to be certified	10
e. Clear identification on the process/facilities involved in the certification	8
f. Training program and related educational activities for staff and other related parties i.e. contractors, suppliers etc	8
6 Environmental impacts	
a. Identification of the significant environmental impacts of the organization's activities, products and services	20
b. The implication should the impacts are not mitigated	8
c. The hiring of environmental specialists or external auditors to facilitate the identification of environmental impacts	8
7 Performance data	
a. Energy - absolute (joules); normalized; trends over time; comparative data within sector	6
b. Materials - absolute (tones, volume or kilograms); normalized; trends over time; comparative data within sector	3
c. Water - absolute (liters or cubic meters); normalized; trends over time; comparative data within sector	2
d. Emissions, effluents and waste - absolute (tones or kilograms); normalized; trends over time; comparative data within sector	6
8 Research and development	
a. There are research and development initiatives undertaken on environmental improvements	10
b. Environmental objectives for the improvements are clearly set out	6
c. Actual and forecasted capital expenditures, liabilities	4
d. Financial qualification benefits	1

Appendix 2 (continued)

9 Third party verification	
a. There is a statement by an external party to verify the information	1
b. The statement clearly states:	
Remit and scope	0
Indication of site visits and site-specific testing	0
Interpretation of data/performance reported	0
Indication of any data /information omitted that could/should have been included	0
Independent comment on corporate targets set and impacts identified	0
Shortcomings and recommendations	0
10 Compliance/non-compliance	
a. Statement indicates that the organization is in compliance with such laws and regulations	25
b. List of number of sites or departments that have received complaints or have been prosecuted	1
c. Total number of fines paid or volume of fines/complaints	2
d. Statements to indicate whether any environmental accidents have occurred	3
e. Procedures that have been put in place to prevent such incidents/non-compliance to recur	4
f. Comparison of the data over time	1
g. Comparison of the data within sector	0
11 Financial data	
a. There is an environmental financial statement	0
b. The environmental information is integrated within the conventional financial statement	5
c. The company practices environmental full cost accounting	0
d. Conventional financial data	0
Environmental investment /liabilities	1
Environmental savings/ expenses	4
Any specific accounting policies adopted	1
e. Investment appraisal consideration	1
12 Stakeholder engagement and other initiatives	
a. Stakeholder engagement	
Indication of the stakeholder engagement in practice	18
Approaches to stakeholder consultation	8
Discussion on the outcome of the engagement	3
b. Community outreach program	
Indication that an organization has conducted a community outreach program	14
Details such as date, place and participation	8

Appendix 2 (continued)

	c. Supporting any environmental campaigns/ initiatives by other parties	8
	d. Charitable contributions to or partnership with environmental organizations	7
13	Awards	
	a. Any environmental reporting awards received by an organization	11
	b. Other awards	17
14	Report design	
	a. Indication of any relevant reporting guidelines followed	0
	b. Innovative approach in reporting	0
	c. Appropriate graphics	18
	d. Communication and feedback mechanism	1
	Name of the person or department responsible with preparing the reports	2
	Telephone number or email address	1
	e. Separate environmental section is devoted in the annual report	16
	Total Disclosure	737
	Total Disclosure Item	94
	LOWEST CASES	0
	AVERAGE CASES PER ITEM	8
	HIGHEST CASES	32

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