JOURNAL OF THE ASIA-PACIFIC CENTRE FOR ENVIRONMENTAL ACCOUNTABILITY

VOLUME 14, NUMBER 2, JUNE 2008

Published by the *Centre for Accounting, Governance and Sustainability*, School of Commerce, Division of Business, University of South Australia, Australia.
Supported by *CPA Australia (SA Division)*, 280 Pulteney Street, Adelaide, SA 5000, Australia.
 ISSN 1442-1224

EDITORIAL

A number of members on the Editorial Panel have retired recently for which thanks have been duly extended. In this issue we are pleased to welcome new members to the Editorial Board, one with greater international reach than hitherto and one which should serve the purposes of the Journal well. Our appreciation is extended to the following new members of the Editorial Board:

Dorothy Wood and Donald Ross provide the *first feature article*. They address the relationship between environmental social controls and Australian capital investment. In the *second feature article* Margaret Nowak, Anna Lee Rowe, Gail Thomas and Des Klass are concerned about weaving sustainability into business education.

These feature articles are followed by the Journal's regular sections **Environment extra!** and **Call for papers.**

Contributors should contact

Dr. Sumit Lodhia
Co-Editor
Email: sumit.lodhia@anu.edu.au
Ph: +61 2 61258460
Fax: +61 2 61255005

Instructions for contributors

Articles should be submitted in a word document, *Times New Roman*, 12 point, single spaced, two columns, attached to an email. References should be in the UniSA Harvard author-date referencing style, available from the following link:
http://www.unisanet.unisa.edu.au/learningconnection/student/learningAdvisors/documents/harvard-referencing.pdf

As a guide to authors articles should have no more than 6,000 words. However, the submission of short articles is particularly welcomed. Feature articles are independently peer reviewed by members of the Editorial Board in accordance with the following requirements for classification as a C1 journal article in Australia: 'For the purposes of the HERDC, an acceptable peer review process is one that involves an assessment or review of the research publication in its entirety before publication by independent, qualified experts. Independent in this context means independent of the author.'

ENVIRONMENTAL SOCIAL CONTROLS AND AUSTRALIAN CAPITAL INVESTMENT: INDUSTRY EFFECTS

Dorothy Wood, The Australian National University
Donald G. Ross, Macquarie Graduate School of Management

Abstract

Environmental Social Controls (ESCs) are intended to influence the environmental performance of firms and require them to be more accountable for their environmental impacts. ESCs include governmental interventions such as regulation, subsidisation and mandatory disclosures. A less formal means of social control is stakeholder opinion, which acts principally through market forces. These ESCs are posited to have a socially beneficial effect, imposing various costs and benefits which drive the firm towards investment in less polluting capital equipment. This paper presents the industry effect findings of a survey of 1000 Australian financial managers involved in making capital investment decisions. More particularly, the paper looks at industry differences in perceived importance of mandatory disclosure, regulation and stakeholder opinion to capital investment. Relative to the other ESCs, mandatory disclosure was found to have a very low influence on capital investment across all three industry sectors. The capital intensive extractive sector was found to have the highest level of responsiveness to all ESCs. The food sector was most influenced by regulatory indicators such as fines and penalties, licenses, and permits. The metals sector reported low influence scores relative to the other sectors studied. The findings suggest that greater understanding of industry differences is needed to increase the effectiveness of ESCs.

Introduction

The importance of capital investment decisions is that new machinery and production processes are generally cleaner and less polluting than the older machinery and processes they replace. US and Australian EPAs have funded many studies which illustrate benefits of replacing inefficient machinery and production processes with best available technology (White, Savage, Brody, Cavander, & Lach, 1995; Shields, Beloff and Heller, 1997). These benefits include potential cost savings in terms of reduction of raw material inputs, wastes, clean up costs, regulatory costs and fines and penalties. Australian EPAs have subsidised many small and medium sized companies by providing environmental consultants and interest free funding for upgrades to cleaner, more efficient production processes. Case studies which may be found on the NSW, Victorian and South Australian EPA websites, communicate to other companies the benefits of which may be gained by capital upgrades. However, there is a deficit of research on how managerial capital investment decision-making is influenced by various environmental social controls (ESCs). Much of the extant research on capital investment fails to recognise the influence of environmental costs in capital investment decision making. Measures implemented by government agencies may be implemented without an understanding of their likely effects.

In Australia, four key ESCs used to encourage greener behaviour by industry are mandatory disclosure, regulation, subsidies, and stakeholder opinion. Ross and Wood (2008) found regulation and stakeholder opinion to be generally the most important ESCs with subsidies having less influence and mandatory disclosure having almost no impact on Australian capital investment decisions. This paper extends that work by investigating industry type as a potential moderator of the influence of key ESCs in the extractive, food manufacturing and metals industries. The ESCs examined included mandatory disclosure about

environmental performance, regulatory costs such as pollution charges and mandatory clean-up costs, and stakeholder opinion[1]. The following section presents an overview of the literature on the relationship between ESCs and capital investments and prior industry studies. The key research questions and survey methodology are presented next, followed by the findings of the study, conclusions and suggestions for further research.

Literature review

In this section, Australia's use of mandatory disclosure, regulation, and stakeholder opinion is reviewed followed by studies setting out the influence of ESCs generally in Australia and studies setting out the relevance of industry factors in understanding the impact of ESCs.

1. Mandatory disclosure

The use of information disclosure as a policy instrument is discussed by Synesvestedt (2001, p. 172) who notes that there firms will be forced to 'evaluate the possible impacts of disclosing poor environmental performance against the costs associated with improved environmental performance'. Deegan and Rankin (1996) found that Australian companies believe there is a relationship between positive environmental disclosures and profitability. Disclosure of poor environmental performance may affect capacity to obtain resources such as finance and insurance (Girardi 1999; Nash and Awty 2001). It is likely that firms which must make 'bad news' environmental disclosures will feel pressured to improve actual rather than just stated performance. This pressure can be expected to impact on capital investment decision making.

Australian requirements for mandatory environmental disclosure are as yet only in the introductory stage and have many inconsistencies. For example, environmental accounting disclosures are required by the extractive industry accounting standard, AASB 1022, particularly in regard to provision for site restoration while other industries with significant need to consider site restoration are not required to make such disclosures. Other key mandatory disclosure requirements include the National Pollutant Inventory (NPI) and financial statement disclosure in the Directors' Report. The NPI is a publicly available data base on which firms must disclose details of their listed toxic emissions and is designed to generate political and economic incentives for industry to move towards cleaner production. Disclosure on compliance with environmental regulation is required in the Directors' Report through the Corporations Act 2001, s299 (1)(f). In contrast to accounting disclosure requirements, disclosure of breaches of regulation or prosecution cannot be avoided on the grounds that it is not material or that information has already been provided to the EPA.

2. Regulation

Regulatory measures in Australia include pollution taxes and charges as well as fines and penalties for breaches of environmental regulation. Additionally, the EPA may impose requirements for the clean-up of polluted land. Command and control regulation has been maintained so that absolute limits to pollution can be enforced if necessary, with some market based instruments also being used. For example, the current New South Wales load based licensing scheme has a range of fees introduced for specified pollutant emissions. However, the extent to which regulatory fees, fines and penalties are applied depends on government policy. Buhrs and Christoff (2006, p. 234) note:

> …whether and how the environmental impacts of an industry are addressed by governments does not only or even primarily, depends on the scale and seriousness of those impacts, but rather on the political clout of the industry.

3. Stakeholder Influence

[1] Subsidisation was also investigated but no significant differences were found.

Stakeholder influence in Australia on the firm's environmental performance has been found to be comprised of differing levels of influence by the various stakeholder groups (Tilt, 1997). In particular, Tilt found (p. 381) the following groups to be of influence (in descending order): government, public, consumers, insurance companies, shareholders, lobby groups, banks, suppliers and the media. She comments (p. 382) that:

> This is particularly interesting as studies have shown that lobby groups are extremely active in attempting to influence companies' activities (Tilt, 1994), yet are ranked as the group having least influence by companies themselves. On the other hand, the 'Public' was ranked second to only the government.

While studies of ESCs' influence on environmental performance of the firm have been conducted, investigation of their influence on capital investment has been quite limited. Using factorial experimentation, Wood and Ross (2006) found that Australian managers would be most responsive to changes in stakeholder opinion. Changes in regulation and subsidies would each account for about a quarter of total ESC influence, while changes in mandatory disclosure would have little effect. In a paper related to this one, Ross and Wood (2008) reported that regulations, and stakeholder opinion, generally matter most to Australian capital investment managers but not to the extent that mainstream strategic and financial factors do. They found that environmental subsidies in Australia were generally too low or selective in application to matter to most firms and that mandatory disclosure generally didn't matter to Australian capital investment decision-making.

Evidence of industry response to capital investment decision making

Industry sector is a potential moderator of the influence of the ESCs on capital investment decisions. Evidence indicates that more polluting industries are more motivated by concerns for *environmental friendliness* (Hutchinson and Chaston, 1994). Banerjee (2001, p. 41) comments that 'firms in high-impact industries seem to have integrated environmental issues into strategic actions to a greater extent than other firms.' Studies of environmental disclosure suggest that firms in *dirty* industries are subjected to greater scrutiny by both regulatory authorities and the general public (Adams, Hill and Roberts, 1998). Two studies (Adams, Hill and Roberts, 1998; Cowan, Ferreri and Parker, 1987) found that industry grouping and corporate size were significantly related to the decision to disclose environmental information. Reichert, Webb and Thomas (2000, p. 35) found that "industries that utilise natural resources are more likely than other industries to have formal written environmental policies and practices." The mining industry has clearly reacted to the adverse publicity and increased attention from EPAs arising from its high impact activities. Jenkins (2004, p. 23) reports that mining companies are 'starting to pay serious attention to its social and environmental impacts.' Banerjee (2001) classified metal products as a high-impact industry. However, metal industry firms seem to have been slower than other high impact industries in adopting pollution reduction measures. This is reflected in the following comment by the manager of a lead smelting company: 'In the lead industry, pollution typically goes down only when production goes down' (Zelms, 1990, p. 40). Banerjee (2001) considered the food industry to be among the less polluting industries. Despite this food industry firms are diverse in their activities and in their degree of environmental impact. *Examination of the National Pollutant Inventory* (NPi) website (http://www.npi.gov.au/) shows that food manufacturers are among the industries required to report on their levels pollutant emissions. This suggests that the food industry is less than environmentally benign.

The perspective of managers about their industries was presented in Parker's (1998) study. Parker (p. 38) found that managers

were especially frustrated when one company in an industry causes major environmental damage and attracts the attention of the media. One manager remarked that:

> …it doesn't matter what good work we do…we get stuck with the worst one in the pack. So all we can do in putting reports like this out is hope to chip away at the edges. We know it's never going to be the answer, and while we still have bad players in our industry we'll get stuck with the worst of it.

Parker comments that 'from this perspective, environmental management and accountability become an industry rather than a single company issue.'

In their study of the attitudes of management and the environmental performance of firms in five industries, Baylis, Connell and Flynn et al (1998, p.154) found:

a) Industries which are close to end consumer markets (such as the food industry and the electrical sector) are more motivated by 'good neighbourliness and public concern' than the mechanical sector which supplies to other industries.

b) Personal concern for the environment was highest in the food sector and the chemical sector. The authors suggest that this may be related to sector circumstances. Food sector and the chemical sector employees perceive greater environmental impact than employees in less polluting industries.

c) The mechanical sector and the food sector often failed to recognise that they have harmful impacts on the environment. This was frequently related to the small size of the companies in these industries and a consequent lessening of regulation.

Key research questions and method

The foregoing literature suggests that industry could be an important factor impacting on the effect of ESCs on capital investment decisions. To investigate the actual impact of ESCs on capital investment decisions in differing industries, the following research questions were posed:

RQ1—Does the influence of mandatory environmental disclosure on capital investment vary by industry, and—if so– how do various disclosure instruments affect the capital investment decisions of metals, food and extractive industries?

RQ2—Does the influence of environmental regulation on capital investment vary by industry and—if so—how do various regulatory instruments affect the capital investment decisions of metals, food and extractive industries?

RQ3—Does the influence of stakeholder opinion on capital investment vary by industry and – if so – how do various stakeholders affect the capital investment decisions of metals, food and extractive industries?

To answer these questions, data was collected using a survey questionnaire sent to 1000 randomly selected, financial managers of Australian manufacturing and mining firms. However, 55 surveys were undeliverable and 48 managers were not involved in capital investment decision-making. Of the remainder, 232 usable responses were received (a response rate of 26%).

The Kompass Data Base was use to identify firms in the industries selected for study. Kompass is a data base of Australian business-to-business firms. Important factors considered in the choice of the study population were related to the probable significance of industry differences. Specific requirements applying to one or few industries afford an opportunity for inter-industry comparisons.

Industry differences include:

1. The extractive industries, which are required to make disclosures of an environmental nature under accounting standard AASB 1022 *Accounting for the Extractive Industries*. There are no similar requirements for other industries, even though many of the provisions (and concerns) could equally apply to other industries. A disclosure effect related to this requirement in the mining industry could

indicate the need to extend similar provisions to other industries.

2. Industries close to end consumer markets, such as food and pharmaceuticals were found by Baylis et al (1998) to be more affected by customer pressure than machinery manufacturing firms, which supply predominantly to other industries. Similarly firms in industries frequently targeted by green pressure groups (such as petrochemical and pulp and paper) have been found to be more affected by environmental concerns. Some indication of the extent to which these added pressures influence capital investment decision-making can be gained by comparison with firms which are less subject to public attention.

3. Food and mechanical sectors were noted often to fail to recognise that they have harmful environmental impacts. Baylis et al suggest that this may be attributed to the large number of small firms in these industries.

Based on these considerations the study population selected was 'capital investment managers of Australian firms'. The industries selected were the extractive industries and manufacturing industries which were represented by food manufacturing and heavy metals manufacturing. In all of these industries many companies have a sufficient output of pollutant chemicals to trigger a requirement to report to the Npi data base.

The influence of each of the ESCs on the capital investment decision was gauged by the manager's response to a set of indicators, which are held to be characteristic of that ESC. These indicators were derived from the literature setting out the likely influence on capital investment and are shown along with the results in Tables 1, 2 & 3. In the case of mandatory disclosure and regulation the indicators are ESC instruments, which give rise to direct costs to the firm such as fines and license fees. In the case of stakeholder opinion, where social control is less formal, the indicators are various stakeholder groups. The managers were asked to rate the influence of each indicator on their capital investment using a 7-point Likert scale, with 1 being 'low influence' and 7 being 'high influence'. During the pilot studies some managers felt the need for a 'not applicable' category. This was subsequently included and was scored as zero, although in the survey results for all indicators, we found very little use was made of the 'not applicable' category.

The indicators for each ESC form an index to measure the overall influence of the ESC. Mandatory disclosure, regulation and stakeholder opinion scores were calculated for each manager. An overall mean score, calculated for each respondent's rating of influence for the multiple indicators, was used to calculate a mean index score for each ESC. As a pilot test of the instrument suggested that managers (especially in proprietary companies) were less aware of mandatory disclosure requirements than those for the other ESCs, an additional question asked respondents to indicate their level of awareness of these requirements.

The data was partitioned into industry groups (metal, food and extractive industries) to test for industry effects. In series of ANOVAs the mean indicator score for each of the cost indicators was regressed on industry sectors to determine whether statistically significant differences exist. As well, mean scores for the each of indicators and the overall index for each ESC, were compared across the three industry groups. Cronbach Alpha scores for each index were found to be high (above .8 in all cases), suggesting that all the indexes constructed possessed a high degree of internal consistency.

Results

The study's findings are presented below for the three research questions. The first section of the result table for each ESC sets out the ANOVAs (where the mean indicator score for each of the indicators was regressed on industry sectors to determine whether statistically significant differences exist). Statistically significant differences were

found between food/extractive and metals/extractive. The table showing significance levels may be found in Appendix 3. No significant differences were found in the food/metals analysis. Mean scores for the managers' responses to individual ESC instruments were partitioned by industry. The second part of these result tables sets out the industry mean scores for the each of indicators and the overall index for each ESC.

RQ1: Mandatory environmental disclosure

There are statistically significant differences between the three industry sectors. Significant differences were found between food and extractive sectors and metal and extractive sectors for all four disclosure indicators. Significant differences were detected for all four indicators and for the disclosure index in both the food/extractive and metals/extractive comparisons. The scores for each indicator for mandatory disclosure are shown in Appendix 4, Tables 1 and 2.

The scores for the entire respondent group (Mean 1) indicate that relative to the other social controls, mandatory disclosure has a very low influence on capital investment. However, a second mean was calculated (Mean 2) including only the responses of managers who reported medium high awareness of the requirements. Managers with a higher level of awareness of the requirements reported much higher levels of influence on their capital investment decisions. It is likely that many of the respondents aware of the requirements are from those firms who must comply with them.[2] Many proprietary companies and small firms 'fall through the net' and escape public scrutiny. If the disclosure requirements were applicable to more or all firms their influence could be expected to increase significantly.

[2] Managers of public companies and extractive industry firms.

An examination of the data for the three sectors (metals, food and extractive) shows that although the disclosure scores are low for all sectors, the score for the extractive sector, across all four indicators is about 1 point higher than for the other sectors. A secondary analysis was carried out for mandatory disclosure using only the scores of those managers who indicated medium to high awareness of the mandatory disclosure requirements. The findings for both analyses are shown in Table 1. To distinguish between the two sets of the scores, the mean scores for this second analysis are identified as Mean 2 scores, while the mean score for all respondents is identified as Mean 1. The pattern of higher scores for the extractive industries found for the mandatory disclosure Mean 1 scores was not evident for the Mean 2 scores. For many indicators, the highest Mean 2 scores came from the food and metals industries.

Similarities and differences between the three industry sectors are noted below:

1. The number of extractive sector respondents reporting medium to high awareness of disclosure requirements is, for all indicators about twice as many as in the food and metals sectors. The finding of significant differences between food and extractive sectors and metal and extractive sectors, for all four disclosure indicators is consistent with findings from the descriptive statistics. The Mean 1 scores for each indicator reveal that disclosure has much more influence on the extractive industries than the other two groups. Clearly the impact of mandatory disclosure requirements on the extractive industries is much greater than on the other two sectors. Additional environmental disclosure requirements for the extractive sector seem to be producing a significant impact on capital investment.
2. The requirements for financial statement disclosure were of very low influence for most metal sector respondents (Mean 1 score = 1.21). The smaller number of managers who reported medium to high awareness of this indicator, across all three sectors, rated it above 3. The food sector reported the highest

Mean 2 score (4.05), with metals second (3.78) and extractive lowest (3.02). It may be that many extractive industry managers consider qualitative disclosures such as those in the Directors' Report more influential than quantitative financial disclosures. This view is perhaps reflected in the numerous 'glossy' environmental reports appearing in extractive sector annual reports in recent years.

3. The NPi indicator was reported to have low influence by the food and metals sectors (Mean 1 scores of 0.66 and 0.61 respectively). The extractive sector considered the NPi to be of more influence than the other two sectors (Mean 1 score = 1.36). The Mean 2 scores were found to be much higher. Surprisingly, the metal sector had the highest mean (3.4), followed by food (3.16) and extractive lowest (2.59). However, the numbers of respondents in metals and food sectors were low (10 and 13 respectively). This finding suggests the possibility that the NPi may have potential to be a much more effective social control measure. It is likely that this effect can only be achieved with the lowering of the threshold, coupled with public education about the NPi. Due to the small number of respondents reporting awareness of the requirement, *n* for Mean 2 is also relatively small. It is possible that this small group of respondents are those whose firms are captured by NPi reporting requirements. If this is the case, it suggests that the NPi is effective, at least for those firms or managers who must report. Again there were significant differences between the food and extractive sectors and the metals and extractive sectors but not between food and metals.

4. Expected increases in disclosure requirements were found to have the lowest influence on the managers of the food (Mean 1 - 0.45) and metals sectors (Mean 1 - 0.59), but was slightly more influential than the NPi for the extractive sector (Mean 1 - 1.5). Respondents could be expected to have some degree of familiarity with the trend towards increased environmental disclosure, with recent increases in disclosure requirements such as the Directors' Report disclosures. However, if disclosure requirements to date have put little pressure on managers, they may not perceive new disclosure requirements as a threat.

Relative to the other ESCs, mandatory disclosure has a very low influence on capital investment across all three industry sectors. This is of concern because it strongly suggests that mandatory environmental disclosure is ineffective as a social control. Many proprietary companies and small firms 'fall through the net' and escape public scrutiny. If disclosure requirements were applicable to all (or more) firms its influence could be expected to increase significantly. Although the mean disclosure scores were low for all sectors, the extractive industry score was fairly consistently about 1 point higher than the mean scores for the other sectors. This changes when the Mean 2 scores are considered. Managers across all three industries who are more knowledgeable about mandatory disclosure requirements (probably because they are required to comply with them) are similarly influenced by them. This suggests that disclosure requirements could be much more effective if they were more broadly applicable.

Although the magnitude of influence differed, all three industry sectors were in agreement about the ranking order of the indicators for mandatory disclosure. Directors' Report was perceived as most influential, followed by Financial Statement disclosure, *National Pollutant Inventory*, while 'expected increase in disclosure requirements' was last for all sectors. However, the mean scores for each indicator reveal that disclosure has much more influence on the extractive industries than the other two groups.

RQ2: Environmental regulation

Significant differences were found for all regulation indicators and for the regulation index in the metals/extractive comparison. Differences between food and extractive

sectors were detected for *natural resource damage*, *site restoration and remediation* and *licences and permits*. These differences are shown in Table 4 in Appendix 4.

Similarities and differences between the three industry sectors are noted below:

Site restoration was very influential for the extractive industries, but of relatively low influence for the food and metal industries. Although the food industries are arguably less likely to produce polluted sites than the extractive industries, many are not environmentally benign. Sugar refiners, dairy, meat, bakery, brewery and oilseed crushers all produce (or use) sufficient pollutant substances to be above the threshold for listing on the National Pollutant Inventory database. The metal industry does not have a high public profile and many firms in this industry supply predominantly to other firms rather than direct to the consumer. This may help explain the lower influence scores from this industry.

The food industries were most influenced by environmental fines and penalties, and cost of licences and permits. Baylis et al's (1998) UK study describes the food industry (p. 156) as a "laggard sector" with a "bad record for pollution incidents". If the situation is similar in Australia many food industry firms may have been impacted by fines and penalties. Another possible reason is that, as the food sector has a high level of small and medium sized firms, compliance cost may impact more on this sector than other sectors with many larger firms and/or 'deeper pockets'.

1. Metal industry managers viewed 'hazardous waste treatment or disposal' as the most influential indicator, yet reported 'charges for emissions to air/water' as least influential. For the other two industries, both of these indicators were of moderate influence. This is not surprising and may reflect the differing methods of disposal of waste in the three sectors.
2. Internal and external property damage were ranked low in influence (relative to the other indicators) for all three industries. In particular, internal property damage was the lowest scoring indicator for the extractive industries. This may be because extractive activities are inherently damaging to the property and site restoration is a normal part of termination for most projects.
3. More surprisingly, the metal industry managers reported expectation of future increases in compliance costs as relatively high in influence. Concern about future increases in compliance costs seems inconsistent in an industry with the lowest scores for influence of regulation. On the other hand, extractive industry managers considered future increases in compliance costs to be of relatively low influence. Considering that the extractive industries were the sector most influenced by cost of regulation overall, this also seems surprising. A possible explanation for this may be that many extractive operations are relatively short-term projects.

RQ3: Stakeholder opinion

In both the food and metals extractive comparisons, significant differences were detected for investors, insurance companies, banks, credit rating agencies and green pressure groups. These differences are likely to be a function of (i) differing public perceptions about these industries, (ii) whether the company is publicly listed (which increases public scrutiny), and (iii) the extent of its need for borrowing.

The metal and food industries were largely in agreement regarding the assessment of stakeholder influence. The mean influence scores and rankings of the indicators showed only marginal variations. Correspondence with the whole sample was similarly quite high. However, the extractive industry managers' assessments of stakeholder influence differed from the other sectors, with higher influence scores reported for all indicators. The findings for stakeholder opinion are set out in Appendix 4 Table 3.

Similarities and differences between the three industry sectors are noted below:

1. Investors were highly influential for the extractive industries but less so for food and metals industries. In the capital intensive extractive industries, many projects and firms are likely to rely heavily on funding from shareholders and creditors. Additionally the number of proprietary companies was much lower in the extractive sector (38%) as compared to food (64%) and metals (72%). It is not surprising that the extractive sector, with a high proportion of publicly listed firms, would report the influence of investors to be high.
2. For employees, customers, competitors and suppliers, the mean influence scores were fairly similar for all industry sectors. Possibly managers from the three industries have a high level of agreement about these stakeholders. However, food and metals sector managers reported employees and customers to be of higher influence than investors, whereas they were less influential than investors, insurance companies and creditors for extractive industry managers. This suggests that differences in the rank order for the extractive industries stems from the highly capital intensive nature of the extractive industries and consequent high importance of relevant stakeholders, rather than to lack of concern for or importance of employees.

The managers in all three sectors were in agreement in viewing green pressure groups as low in influence. During the pilot testing several managers indicated a strong dislike of green pressure groups. It seems that this is a sensitive issue and it is possible that many managers are unwilling to accord a high influence to this group. Although significant differences were detected in food/extractive and metal/extractive comparisons of mean scores, managers of all three industries were consistent in according credit rating agencies very low influence.

Banks and other creditors and insurance companies were reported to be highly influential by the extractive sector and moderately high influence by the other two sectors.

An overview of the 3 industry sectors

In this section the data on each of the social controls is drawn together to provide an overview of each industry sector. The survey responses indicate that the extractive industries are the sector most influenced by the social controls. Extractive industry mean scores were (on average) at least one point higher than those of the metal and food industries. The metal industries emerged as the sector consistently least influenced by all the social controls. For each of the three industry groups, data on each social control measure is summarised and discussed below.

Extractive sector

The extractive sector is characterised by its high level of responsiveness to all ESCs. A likely explanation for extractive sector responsiveness is that mining is highly capital intensive, with large investments required for acquisition of sites and also for plant and equipment. This makes capital investment a very important issue for extractive industry firms. Also the extractive sector has been subjected to a high level of public scrutiny in recent years. This has made environmental performance a crucial issue for this industry.

For mandatory disclosure the extractive sector reported an influence score which was low relative to the other ESCs. Even so the influence level was high compared to the other two sectors. Extractive sector managers showed a much higher awareness of disclosure requirements than the other sectors probably due to more stringent disclosure requirements for this sector. For the regulation indicators site restoration and remediation, licences and permits and environmental fines and penalties were the most influential indicators. Of some concern is the finding that despite the bad publicity about tailings dam collapses in recent years, hazardous waste treatment and disposal emerged as only fourth in influence. The extractive industry managers' assessments of stakeholder influence differed from the other sectors, with higher influence scores reported for all indicators. Interestingly, only

the extractive industry managers indicated that investors, insurers and creditors were more influential than employees and customers. One possible reason for this is the extractive industry's large export market. Customers in other countries are less likely to be concerned about environmental performance in Australia than Australian customers.

As the majority of extractive sector respondents were from publicly listed firms this may account for the higher influence of investors in the extractive sector. The extractive industry is subjected to a high level of public attention in regard to its environmental impacts, so it is not surprising that its managers displayed a higher than average level of responsiveness to stakeholders. However, given the capacity of green pressure groups and credit-rating agencies to damage a firm's reputation it is surprising that these groups were reported to have relatively little influence.

Food sector

The food sector does not generally attract a high level of public attention in regard to its environmental performance. However, many food sector firms use highly polluting chemicals and must report to the National Pollutant Inventory, so the food sector cannot be considered as environmentally benign. Regulatory indicators of most influence were fines and penalties, followed by licences and permits. It appears that the food industry responds more to sticks than to carrots. The regulation indicators showed that despite the large number of food sector firms which use highly toxic chemicals, site restoration was the least influential regulatory indicator. The food sector managers reported employees and customers to be most influential stakeholders. This may be influenced by the large number of proprietary companies in the food sector, who are generally more insulated from stock market forces. Credit rating agencies and green pressure groups were again reported by managers as having the least influence on capital investment.

Metals sector

The metals sector is characterised by low influence scores relative to the other sectors studied. The regulation indicators showed 'hazardous waste treatment and disposal' to be of greatest concern to the metal sector. However, 'future increases in compliance costs' was also high in influence. This is somewhat surprising given the low influence of all the regulatory indicators. 'Charges for emissions to air/water' was reported to be the least influential indicator. The stakeholder opinion indicators showed 'customers' and 'employees' as the most influential groups. The lower influence of investors may possibly be due to the larger number of proprietary companies in the metal sector than the other two sectors. Green pressure groups and credit rating agencies again were reported as the least influential. However, this is not surprising as the metal sector supplies predominantly to other manufacturers and seems to escape much of the public scrutiny which is directed to the extractive sector. Mandatory disclosure influence was much lower than in the extractive sector. However, the much higher influence score for managers who were aware of disclosure requirements suggests the need for more stringent requirements and education of managers about these requirements. This is especially the case because the metal industry can be considered as highly polluting.[3] The low influence of the social controls on its capital investment decision-making is therefore of great concern.

Conclusion

The evidence suggests that industry sector moderates the manner in which capital investment decision-making is influenced by mandatory disclosure, regulation and stakeholder opinion. The three industries were found to be internally very consistent in their levels of sensitivity to indicators of

[3] According to the US EPA's Toxic Release Inventory Report (1995) the primary metals sector was second after the chemical industry in overall toxic releases (Kertes, 1997).

all ESCs. Statistically significant differences between the sectors were also shown. Extractive sector managers were on average much more influenced by environmental regulation, mandatory disclosure and stakeholder opinion than food sector managers, with metals industry managers reporting the lowest levels of influence across all indicators. The sensitivity of the extractive sector and the level of public scrutiny may be further accentuated by the high proportion of public companies in the extractive sector, relative to the other two sectors (extractive 62%, food 36%, metals 28%). Additional environmental disclosure requirements for the extractive industries may also be a contributory factor.

This study has opened up new areas, which offer the possibility of substantial contributions to environmental research. The findings of this study indicate that some ESCs have low levels of influence in encouraging investment in less polluting plant and production processes. A necessary first step in increasing effectiveness of these ESCs is enhanced awareness of the moderating effect of industry differences. In-depth information on the likely response to changes in these ESCs could be provided by case studies of capital investment decisions made by firms in various heavily polluting industry sectors.

References

Adams, CA Hill, W & Roberts, CB 1998, 'Corporate social reporting practices in Western Europe: Legitimating corporate behaviour', *British Accounting Review,* vol. 30, pp. 1-21.

Aragon-Correa, JA & Rubio-Lopez, EA 'Proactive corporate environmental strategies: Myths and misunderstandings', *Long Range Planning,* vol. 40, pp. 357-381.

Banerjee, SB 2001, Corporate environmental strategies and actions, *Management Decision*, vol. 39, no. 1, p.36.

Baylis, R Connell, L & Flynn, A 1998a, 'Sector variation and ecological modernization: Towards an analysis at the level of the firm', *Business Strategy and the Environment,* vol. 7, pp. 150-161.

Bryman, A & Cramer, D 1997, *Quantitative data analysis with SPSS for Windows,* Routledge, London.

Buhrs, T & Christoff, P 2006, 'Greening the antipodes? Environmental policy and politics in Australia and New Zealand', *Australian Journal of Political Science*, vol. 41, no. 2, pp. 225-240.

Cowan, SS Ferreri, LB & Parker, LD 1987, 'The impact of corporate characteristics on responsibility disclosures: A typology and frequency-based analysis', *Accounting, Organisations and Society,* pp.111-122.

Deegan, C & Rankin, M 1996, 'Do Australian companies report environmental news objectively?', *Accounting, Auditing and Accountability Journal,* Vol. 9, No. 2, pp. 50-67.

Girardi, G 1999, *Accounting for waste as a business management tool: Best practice guideline,* Management Accounting Centre of Excellence, Australian Society of Certified Practising Accountants, Melbourne.

Hutchinson, A & Chaston, I 1994, 'Environmental management in Devon and Cornwall's small-and medium-sized enterprise sector', *Business Strategy and the Environment,* vol. 3, no. 1, pp. 15-22.

Jenkins, H 2004, 'Corporate social responsibility and the mining industry: Conflicts and constructs', *Corporate Social Responsibility and Environmental Management*, vol. 11, pp. 23-34.

Kertes, N 1997, Metals retain high toxics rank, *American Metal Market,* vol. 105, no. 106, p. 6.

Nash, I & Awty, A 2001, Just clowning around?, *Australian CPA,* March, pp. 26-32.

Norusis, MJ 2000, *SPSS 10 guide to data analysis*, Prentice Hall, New Jersey.

Parker, LD 1998, *Environmental costing: An exploratory examination*, Australian Society of Certified Practising Accountants, Management Accounting Centre of Excellence, Melbourne.

Reichert, AK Webb, MS & Thomas, EG 2000, 'Corporate support for ethical and environmental policies: A financial management perspective', *Journal of Business Ethics*, vol. 25, pp. 53-64.

Ross, DG & Wood, D 2008 'Do environmental social controls matter to Australian capital investment decision-making?'. *Business Strategy and the Environment*, (forthcoming) Vol. 17 No. 5.

Scherpenzeel, AC & Saris, WE 1997, 'The validity and reliability of survey questions: A meta-analysis of MTMM studies', *Sociological Methods & Research,* vol. 25, no.3.

Shields, D Beloff, B & Heller, M 1997, *Environmental cost accounting for chemical & oil companies: A benchmarking study,* Office of Pollution Prevention and Toxics, Washington DC.

Synnestvedt, T 2001, 'Debates over environmental information to stakeholders as a policy instrument', *Eco-Management and Auditing.*

Tilt, CA 1997, 'Environmental policies of major companies: Australian evidence', *British Accounting Review,* vol. 29, p. 367-394.

White, AL Savage, DE Brody, J Cavander, D & Lach, L 1995, '*Environmental cost accounting for capital budgeting: A benchmark survey of management accountants',* Tellus Institute.

Wood, D & Ross, DG 2006, 'Environmental social controls and capital investments: Australian evidence', *Accounting and Finance*, vol. 46, no. 4, pp. 677-695.

Zelms, JL 1990, 'Getting the lead out: A smelter embraces environmental management', *Management Review*, vol. 79, no. 6, pp. 40-44.

Appendix 1: Population Demographics:

1. Company Statistics:

a) Business structure:

Publicly listed company 64%;
Proprietary companies 32%;
"other" (mainly co-operatives) 4%

b) Range of Capital investment Decisions

Smallest Decision: Range: $1 to $20,000,000.
The most commonly cited amount was $1000 (24%).
Largest Decision: **Range:** $10,000 to $550,000,00
There was a fairly even distribution of amount between the bottom and top of this range.

c) ***Number of Employees:*** **Range:** 2 to 1,000,000

d) Annual Sales: **Range:** $50,000 to 40,000,000,000 **Mean:** $462,000,000.
Note: The annual sales figure appears to be a sensitive issue for some companies and 20 respondents declined to answer this question.

2. Manager Statistics:

a) Years of Experience: Ranged 1 – 45 years Mean 14 years

b) Accounting Affiliation:

CPA Australia 67%; Institute of Chartered Accountants 15%; National Institute of Chartered Accountants 11%; Other Accounting Associations 7%

c) Only person involved in making capital investment decisions?

Yes 4.7% No 95.3%

Appendix 2: Choice of Scale Length for Survey Questions

The length of the response scale was based on the work of Scherpenzeel and Saris (1997), and Alwin (1997). Scherpenzeel and Saris's research (p.367) found that "a number scale ranging from 0 to 10 has a much higher validity and reliability than a number production scale ranging from 0 to 100". Alwin (p.322) made a similar assessment:

"Cognitive theorists would suggest that there may be some practical upper limit on the number of response categories people can handle. Certainly given the potential cognitive difficulties that most people have in making discriminations along a scale with numerous categories, it seems plausible to argue that the quality of measurement will improve up to some point, say 7 categories, but beyond that information will actually be lost because the scale points tend to mean less."

Relying on this advice, a seven-point scale was initially chosen for all response scales in the study. However, this was modified after the pilot studies were conducted (see section 3.4.4 for more detail on this point) to include a 'not applicable' (N/A) category. In the case of the mandatory disclosure and subsidisation indicators the N/A category was replaced by 'skip' instructions. However, for the purposes of statistical analysis, N/A and skipped responses were both counted as zero.

Appendix 3: Significance of Industry Differences

Note: All indicators were significant for industry difference at .01 or .05. No significant differences were found between food and metals industries.

***Mandatory Disclosure* Indicator**	**ANOVA**			
	Metals/Extractive		**Food/Extractive**	
	F	Sig.	F	Sig.
Directors' Report	11.229	.001**	10.302	.002**
Financial statements	8.763	.004**	7.526	.007**
National Pollutant Inventory	6.456	.012*	5.650	.019*
Expected increase in financial disclosure requirements	7.915	.006**	12.448	.001**
Score for Index - Mandatory Disclosure	**12.919**	**.000****	**14.503**	**.000****
Stakeholder Opinion Indicator	**ANOVA**			
	Metals/Extractive		**Food/Extractive**	
	F	Sig.	F	Sig.
Investors	7.074	.009**	13.129	.000**
Insurance companies	4.861	.029*	13.110	.000**
Banks/creditors	21.114	.000**	33.559	.000**
Credit rating agencies	15.084	.000**	21.255	.000**
Green pressure groups	6.003	.016*	14.018	.000**
Score for Index - Stakeholder Opinion	**8.001**	**.006****	**15.803**	**.000****
Environmental Regulation Indicator	**ANOVA**			
	Metals/Extractive		**Food/Extractive**	
	F	Sig.	F	Sig.
Charges for emissions to air/water	1.041	.310	12.263	.001**
Hazardous waste treatment or disposal	2.679	.104	6.073	.015*
Expectation of future increases in compliance costs	.358	.551	4.229	.042*
External property damage	2.013	.159	9.703	.002**
Internal property damage	.070	.791	4.539	.039*
Natural resource damage	3.978	.048*	12.510	.001**
Site restoration/remediation	23.523	.000**	26.441	.000**
Environmental fines/penalties	2.131	.147	12.621	.001**
Licences/permits	5.343	.023*	15.120	.000**
Score for Index – Regulation	**4.568**	**.035**	**14.211**	**.000****

*** Significant at .01 * Significant at .05*

Appendix 4: Manager Perception of Influence of Indicators
** All indicators are ranked in order from highest influence to lowest influence*

Table 1: Mandatory Disclosure *Mean 1 – mean of all responses*

Rank order of importance*	Metal Mean 1	Rank order of importance*	Food Mean 1	Rank order of importance*	Extractive Mean 1
Directors' Report	1.3571^{236}	Directors' Report	1.3710^{236}	Directors' Report	2.6000^{236}
Financial Statements	1.2143^{236}	Financial Statements	1.2903^{236}	Financial Statements	2.3273^{236}
National Pollutant Inventory	0.6071^{236}	National Pollutant Inventory	0.6613^{236}	Expected increase in disclosure requirements	1.5091^{236}
Expected increase in disclosure requirements	0.5893^{236}	Expected increase in disclosure requirements	0.4516^{236}	National Pollutant Inventory	1.3636^{236}

Table 2: Mandatory Disclosure
Mean 2 – mean score of managers who indicated they were familiar with the disclosure requirement

Rank order of importance*	Metal Mean 2	Rank order of importance*	Food Mean 2 (S.D)	Rank order of importance*	Extractive Mean 2 (S.D.)
Financial Statements	3.7778^{18}	Financial Statements	4.0500^{20}	Expected increase in disclosure requirements	3.6087^{23}
National Pollutant Inventory	3.4000^{10}	Directors' Report	3.7826^{23}	Directors' Report	3.1778^{45}
Directors' Report	3.3462^{26} (1.3548)	National Pollutant Inventory	3.1538^{13}	Financial Statements	3.0233^{43}
Expected increase in disclosure requirements	3.3000^{10}	Expected increase in disclosure requirements	3.1111^{9}	National Pollutant Inventory	2.5862^{29}

#Number of respondents (N) is given as a superscript number beside each mean

Table 3: Stakeholder Opinion Indicators

Rank order of importance*	Metal Mean	Rank order of importance*	Food Mean	Rank order of importance*	Extractive Mean
Customers	4.429	Customers	4.339	Investors	5.073
Employees	4.358	Employees	4.500	Insurance companies	4.709
Investors	3.625	Investors	3.967	Banks/creditors	4.854
Insurance companies	3.4107	Insurance companies	3.934	Customers	4.527
Competitors	3.286	Banks/creditors	3.355	Employees	4.909
Banks/creditors	3.071	Suppliers	3.435	Competitors	4.018
Suppliers	2.911	Competitors	3.435	Credit rating agencies	3.782
Green pressure groups	2.179	Green pressure groups	2.612	Green pressure groups	3.509
Credit rating agencies	2.143	Credit rating agencies	2.492	Suppliers	3.454
Total Mean for Index 3.7334 (S.D.1.4768) Cronbach Alpha .8964					

Table 4: Environmental Regulation Indicators

Metals		**Rank**	**Food**		**Rank**	**Extractive**		**Rank**
Rank order of importance*	**Mean**		**Rank order of importance***	**Mean**		**Rank order of importance***	**Mean**	
Hazardous waste treatment or disposal	3.643	1	Environmental fines/penalties	4.2258	1	Site restoration/ remediation	5.1455	1
Expectation of future increases in compliance costs	3.393	2	Licences/permits	4.1290	2	Licences/permits	5.0182	2
Licences/permits	3.571	3	Internal property damage	3.9194	3	Environmental fines/penalties	4.8364	3
Environmental fines/penalties	3.411	4	Expectation of future increases in compliance costs	3.9355	4	Hazardous waste treatment or disposal	4.6364	4
Site restoration/ remediation	3.125	4	Hazardous waste treatment or disposal	3.9355	5	Natural resource damage	4.6545	5
Natural resource damage	3.250	6	Natural resource damage	3.8387	6	Charges for emissions to air/water	4.3556	6
Internal property damage	3.214	7	Charges for emissions to air/water	3.8852	6	External property damage	4.3091	7
External property damage	3.071	8	External property damage	3.7419	8	Expectation of future increases in compliance costs	4.1636	8
Charges for emissions to air/water	2.804 (2.3310)	9	Site restoration/ remediation	3.1774 (2.6085)	9	Internal property damage	4.0182	9
Total Mean for Index 3.8433 (SD1.9352) Cronbach Alpha = .9454								

WEAVING SUSTAINABILITY INTO BUSINESS EDUCATION

Margaret Nowak, Anna Lee Rowe*, Gail Thomas, Des Klass

* Address for correspondence:
Curtin University of Technology
GPO Box U1987
Perth 6845
Western Australia
Tel: +61 8 9266-3959
Email: Anna.Rowe@gsb.curtin.edu.au

The authors acknowledge the Department of Environment and Heritage (now known as the Department of Environment and Water Resources) for funding this preliminary project through the Australian Research Institute in Education for Sustainability (ARIES) at Macquarie University in Sydney. We wish to thank Associate Professor Daniella Tilbury, Janelle Thomas, Jeremy Mah and the ARIES partners for their support and encouragement in this exploratory study that is a component of a larger ongoing project

Abstract

The imperative for addressing complex sustainability challenges through education underpins the UN declaration of the 2005 to 2014 *Decade of education for sustainable development*. Sustainability has been burgeoning as a theme for business schools worldwide with increasing numbers of courses and specialisations on sustainability in degrees such as the *Master of Business Administration* (MBA) programs. However, in the current *2007-08 Beyond Grey Pinstripes* Global 100 ranking of social and environmental issues in MBA programs, only one Australian university is listed (Aspen CBE 2007). The aim of this preliminary empirical research is to explore the essential linkage between the sustainability requirements of business and curriculum offerings. The findings in this paper support the call for holistic embedding of sustainability in business education to develop current and future business leaders' capacities and competencies in shifting towards corporate sustainable development.

Introduction

Education for sustainability (*EfS*) in business higher education was prioritized for action by the Australian government through the *Department of the Environment and Heritage* (DEH), (Tilbury, Adams et al. 2005 p. 96). Business schools worldwide are witnessing an increasing requirement for *Master of Business Administration* (MBA) students to take a dedicated course in business and sustainability (Aspen CBE 2007; Ethical Corporation 2007). However, in the 2007-08 Beyond Grey Pinstripes *Global 100* ranking of social and environmental issues in MBA programs, only one Australian university appears (Aspen CBE 2007).

The findings reported in this article relate to an introductory project designed in response to earlier studies indicating that MBA programs in Australia are lagging behind leading business schools internationally in preparing graduates with the skills required for strategic change towards sustainability (Bennis and O'Toole 2005; Tilbury, Crawley et al. 2005; Benn and Dunphy in press). This preliminary study reflects one component of an ongoing longer term program on education about and for sustainability within seven business schools, in collaboration with the *Australian Research Institute in Education for Sustainability* (ARIES) based at *Macquarie University* and funded by the Australian Government DEH (now known as the *Department of the Environmental and Water Resources*).

Several researchers (e.g., Henderson, McAdam *et al.* 2006; Guide and Wassenhove 2007) have discovered the benefits of identifying and building relationships with organisational sustainability champions. Adams and Larrinaga-González (2007, p. 333) assert that: 'research engaging with organizations is needed in order to identify how accounting and management systems might reduce their negative sustainability impacts.' Building relationships with sustainability champions in companies will provide opportunities for understanding the variety

of business approaches, concepts and issues and contributing to *EfS* within business curriculum offerings and their related pedagogy.

The focus of this project was specifically to explore the opportunities, through education for sustainability, for current and future business leaders to develop capacities and competence in shifting towards sustainability. The research aimed to:

- Identify and understand the current levels of knowledge and the expectations of MBA and other business graduates in the area of sustainability; and
- Identify and build relationships with sustainability champions in the corporate sector, thus providing opportunities for building understanding of the variety of business approaches, concepts and issues and contributing to the development of sustainability within business curriculum offerings and their related pedagogy.

In addressing these major research objectives and exploring the complexity of sustainability challenges, we needed to penetrate the social contexts of *EfS* in such a way that perceptions and respondents' views can emerge. To achieve this, the *constructivist* ontology and *interpretivist* epistemology was chosen. The *realities* of sustainability in business and *EfS* presented by *MBA* and *Master of Leadership and Management* (MLM) students and industry participants must be interpreted and understood *(verstehen)*, rather than empirically measured, and explained *(erklären).*

Given the focus on *EfS* and 'sustainability' (a concept around which much of the ground is ideologically controversial), this qualitative research is effective in permitting a preliminary exploration of the understanding and contexts within the business community and the graduate students leading to more informed action for achieving curricula change towards sustainability in *MBA* and *MLM* programs. It is worth noting that this research forms part of a wider research agenda that adopts an *Action Research* approach (Kemmis and McTaggart 2000).

The paper commences with a brief review of the literature and its significance. This is followed by discussion of the research methodology used, a report on the findings, and discussion of the emerging themes and their implications on *EfS*. The paper concludes with a summary of lessons learned and recommendations for future action research in *EfS*.

Background

The most widely cited definition of sustainable development is that defined by the 'Bruntland Commission' as development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 8). This definition integrates environmental, economic and social sustainability and is the most often referred to by business. However, as Byrch et al. (2007) point out, the original statement included further amplification on giving overriding priority to the essential needs of the world's poor and on the limitations of the environment's ability to meet present and future needs.

Several researchers believe that the concept of sustainability will continue to be ideologically controversial, 'fuzzy' and elusive (Beckerman. 1994; Gladwin, Kennelly et al. 1995). However, the lack of a definitive conceptual framework for sustainable development and sustainability in business does not preclude the advancement of *EfS* to empower graduates with the vital skills to deal with the challenges.

A recent survey by the Economist Intelligence Unit (The Economist 2008) reveals that corporate social and environmental responsibility issues are increasing sharply in the priorities of global executives. The 2007 United Nations Intergovernmental Panel on Climate Change, coupled with Al Gore's statements on global warming and the Stern review , have propelled global environmental

sustainability issues further to the forefront (Rowe in press).

International initiatives such as the UN declaration of the *'Decade of Education for Sustainable Development'* (2005 to 2014), Beyond Grey Pinstripes, and ProSPER.Net attest to the significance of engaging business and education with sustainability. Learning is imperative in understanding and addressing pressing sustainability challenges (Ballard 2005; Dunphy, Griffiths et al. 2007). Higher education institutions, according to the Japanese Ministry of Environment (ProSPER.Net), have a vital role to play in creating a sustainable society.

Sustainability has been burgeoning as a theme for business schools worldwide with increasing numbers of courses and specialisations on sustainability in MBA programs (Ethical Corporation 2007; Herro 2007). According to the most recent Beyond Grey Pinstripes 2007-2008 report, a biennial ranking of business schools' social and environmental leadership sponsored by the Aspen Institute, 54 percent of participating institutions now require a course in ethics, corporate social responsibility, sustainability, or business and society, up from 45 percent in 2003 (Aspen CBE 2007).

The same escalating trend in weaving sustainability into tertiary curricula cannot be claimed for Australian business schools. Only one Australian university made it to the 'Beyond Grey Pinstripes 2007-2008 *Global 100'* ranking for social and environmental stewardship in MBA programs (Aspen CBE 2007). Several studies have found that Australian business schools are falling behind leading practice and innovation in sustainability (Tilbury, Crawley et al. 2005; Holdsworth, Bekessy et al. 2006; Benn and Dunphy in press). *ARIES* colleagues at another University also noted the ad hoc incorporation of sustainability into the curricula of most business schools, mostly confined to specialist electives (Benn and Dunphy in press).

The literature on education for sustainability has two streams, the first reviewing what is happening in the broad context (e.g., Ferreira, Ryan et al. 2007), while the second stream considers the use of innovative pedagogies for sustainability education. The latter include the use of dialogue and inter-professional learning (Martin 2005), sustainability within an evolutionary guidance system which could lead to institutional evolution (Rowland 2004), inclusion of a critical theory perspective (Kearins and Springett 2003; Welsh and Murray 2003), and action research (Kemmis and McTaggart 2000; Lange 2004).

Recognising the important role of Australian business schools in driving change towards sustainability, the Australian Government DEH commissioned *ARIES* to conduct a study into education about and for sustainability. In 'MBA Stage 1', *ARIES* found that most MBA degrees do not sufficiently equip graduates with the skills required for strategic change towards sustainability and there are no 'needs analysis' studies that identify the training requirements of business senior management to advance sustainability within their organizations (Tilbury, Crawley et al. 2005).

This study aimed to address this gap by exploring (a) expectations of MBA and other business graduates in the area of sustainability; and (b) the building of relationships with sustainability champions in the corporate sector, hence, providing a critical link between the business context and curriculum offerings.

The research has the potential to add to our understanding of perceptions of sustainability values and practice by graduate students and practitioners, and the skills and knowledge requirements to deal with the challenges of sustainability. It provides one strand in the link between the requirements for business graduates and what is currently offered on sustainability within the curricula. It provides data on the value drivers and perceived motivations of students in relation to courses on sustainability which provides important learning relevant to the provision of

sustainability education, including input for course design and pedagogy.

Methodology

The preliminary study was undertaken in 2006 in Western Australia and formed part of a wider ongoing research program to facilitate the critical examination of MBA curriculum leading to better informed action for mainstreaming sustainability into business education.

The research paradigm

All researchers are guided by principles which shape how they see the world and act within it. This set of principles can be termed the paradigm, sometimes called an interpretive framework, which represent a basic set of beliefs that guides action (Guba and Lincoln 1994). Denzin and Lincoln's definition of paradigm demonstrates how the researcher is guided in the study: 'the basic belief system on world view that guides the investigator, not only in choices of method, but in ontologically and epistemologically fundamental ways' (Denzin and Lincoln 1994, p106).

The focus of this project is to explore MBA Students' and Sustainability Practitioners' perceptions of the elements of successful sustainability within business and curriculum offerings, as well as relationship building with the corporate sector. The literature highlight the fact that the meaning of 'sustainability' is not a socially stable phenomenon but rather a set of personal constructs and individual perceptions giving rise to multiple realities (Gladwin, Kennelly et al. 1995; Marrewijk 2003). The multiple realities in this study are to be found in two sources, MBA students and business practitioners with a focus on sustainability in Western Australia (WA).

To discover the students' and the business community's perceptions, a *constructivist* and *interpretivist* approach requiring a qualitative methodology was adopted. This perspective informed the methods of data collection used in this study which included semi-structured focus group sessions using Group Support System (GSS) technology and a series of 'elite' interviews. This constructivist approach was designed to incorporate multiple views of the concepts surrounding sustainability within business, among business students and within curriculum offerings.

Data collection methods

Current and past MBA students from the GSB and sustainability practitioners from WA companies were approached in this study.

Two focus groups were conducted to bring together a group of MBA students and a group of business practitioners to elicit their views on the main aspects of the research. The focus group sessions were conducted to explore participants' experiences and perceptions of sustainability resulting from their activities in business and exploration of curriculum offerings, using the electronic GSS facility. The GSS offers several advantages, including anonymity and opportunity to generate high volumes of quality responses in relatively brief 'brainstorming' sessions (Forrest 1999; Easton, Easton *et al.* 2003; Newby, Soutar *et al.* 2003).

Guided by an agenda based on the research objectives and aided by an independent facilitator the focus groups provided an efficient means of identifying and gathering different perspectives, surfacing concerns and issues, identifying possible explanations and a range of options relating to *EfS*. Through the use of the GSS system, the hardware and software of which was managed by a 'chauffeur', the participants brainstormed and organised their ideas and perceptions. The anonymity of the process enabled participants to focus on relevant issues. Automatic documentation and immediate results were provided by the GSS system, with information from individual terminals and aggregated information able to be displayed through projection facilities, enabling ongoing evaluation and reiteration.

The agenda was designed to be as open as possible to encourage maximum

participation and contribution of their various perceptions and ideas. The questions posed to the MBA student group included:

- What does the concept sustainability mean to you?
- Where did you gain your understanding of this concept?
- What value will (or has) the course on sustainability strategies and or management provide you with?
- What would impel or motivate you to enrol in a course on sustainability?
- What are the vital skills or information you need to gain from a course (or have gained from a course) on sustainability that enable or help you to develop sustainable business strategies?

And the questions posed to the business focus group included the following:

- What are some of the aspects of *doing sustainability* that you would consider to be the most important for business students to gain in their business course?
- Do current business students meet the expectations of your organisation in sustainability management and or reporting?

Each session lasted about two and a half hours. There were sixteen participants in the focus groups.

For the second source of data several elite interviews were conducted using the method of in-depth, semi-structured interviews. This was appropriate for the study's subject matter aimed at surfacing diverse views, thus allowing the spontaneous flow of information and interaction and maximum flexibility to pursue information in whatever direction appeared to be appropriate.

Because the interview was one of just two main data collection methods used in this study it was important that participants were provided with the greatest opportunity to explore the phenomena of sustainability and opinions on *EfS*. To achieve this, a semi structured in depth interview format was used. These questions are generally asked in a systematic and consistent order. Interviewers are allowed to probe deeper beyond the answers provided.

In-depth interviews help to uncover the participant's perspectives on the meaning of sustainability and what would be valuable skills and knowledge in MBA and other business students. An assumption fundamental to qualitative research is that the participant's perspective on the phenomenon of interest should unfold as the participant views it, not as the researchers view it. The most important aspect of the interviewer's approach was to convey an attitude of acceptance that the participant's information was valuable and useful.

Broad questions were used as a focus for the semi structured interview process. It must be stresses that the researchers through the semi-structured process, allowed participants to explore points of relevance, outside the interview structure, when appropriate. A couple of examples of focus questions used in the interview to allow conversation included the following:

- What are some of the aspects of doing sustainability that you would consider to be the most important for a business student to gain in their business course?
- Do you think issues in sustainability should be compulsory in business courses? Why?

The interviews were taped with the permission of the participants. Data analysis was then undertaken and focused on "clustering around themes". Coding, using descriptive codes for categories of meaning, was undertaken by the researchers. The software package, NVivo, as detailed below, was used to assist in the data management of this stage. The data analysis protocol used in this study was informed by the framework suggested by Moustakas (1994) where every significant statement was initially treated as possessing equal value. Those statements that were irrelevant, repeated and were overlapping were deleted and the remaining statements represented the textual meanings gleaned from the data.

NVivo allowed all data collected to be organised and referenced by two separate but

parallel databases, called the document system and the index system (Weitzman and Miles 1995). The document system kept track of all of the text files and the index system organised codes and kept track of the way the text was indexed. The following section presents the findings from the analysis of the two sources of data collection.

Findings

Guided by the *constructivist* ontology and *interpretive* paradigm (Guba and Lincoln 1994; Parker and Roffey 1997) and the developing of theoretical sensitivity, we constructed "many ideas which have emerged from analysis of the data" (Glaser, 1978, cited in Strauss 1987 p. 23). Through systematic analysis of interview and focus group notes, observations and the continual coding and comparing of data, a number of themes emerged throughout the iterative data collection and various stages of analyses in this exploratory study. In reporting the data, the convention adopted for acknowledging blocks of extracts from focus groups and interviews is to introduce and to conclude each quote with the following designation …/

As a precursor to exploring the main objectives of the study, we discovered that one of the difficulties faced by business was the language surrounding *sustainability* and *corporate social responsibility* (CSR) issues. The plethora of definitions were confusing to those who were knowledgeable in the field, but even more confusing to those in the workplace who were being introduced to these terms. The all encompassing 'fuzzy' conceptual perceptions of *sustainability* were evidence by some of the following quotations:

…/[having] their own language about it was important because I know Company A's philosophy about training people and needing people is that you can create that culture and get people operating that way if you do create your own language internally that everybody gets inducted into and starts to use. …/ it was interesting to watch that in action because they were upholding many of the concepts of CSR but just not willing to use the language.../ the terminology can be seen quite negatively…/ anyone who's been around for twenty-five years or more is a sustainable company. It's just they don't know how to express it…/

Indeed, the normative overtones and assumptions inherent in much of the debate are likely to leave practitioners and proponents confused (Wheeler, Colbert et al. 2003). In understanding the context from which the concept of sustainability was construed, it is noteworthy to consider some of the students' perceived meanings of sustainability through their worldview. For instance:

…/sustainability means utilisation of resources that can last well into the future generations that is viable and friendly to the environment …/ The responsibilities of individuals and corporations in how resources and environmental factors/contributors can be sustained and used towards business and future lifestyles. …/ true sustainability is the utilisation of resources in a way that they never run out, i.e. regrowth of forests=logging rate …/ Taking the future into account in decision making including the costs to future generations of our actions today. This means having a handle on the costs and benefits in social, environmental and economic terms…/

Equally important to understanding the conceptualisation of sustainability through the lenses of the students are the source(s) from which they derived their understanding of the concept. This provided vital insights into the degree to which current curricula (e.g., Environmental Management Strategies 660 and triple bottom line in Financial Management 550) in the MBA program had contributed in part, to graduate students' awareness of sustainability issues and how we can continue to improve our commitments to our stakeholders. Through critical experiential reflection during the focus group session with students, GSS

captured some of their recollections as extracted below.

…/initially from the media…/ increased understanding from MBA units…/Knowledge acquired at Environmental Management Strategies 660 unit…/Financial Management 550 unit…/Discussions with colleagues and other students. …/Through Local Councils and Government initiatives…/witnessing the destruction of the worlds natural resources through travel…/First from high school and later at undergrad studies, and finally at EMS as part of MBA course… The last provided a deeper understanding of business and sustainability …/past organisations programs in recycling; public forums on conservation, newspapers and magazine articles on deforestation…/

In exploring organisational approaches to sustainability challenges, there was strong agreement that advancement towards sustainability needs to be holistic, embedded within the company rather than constrained within a 'sustainability silo', or as one participant described it, an isolated 'bolt-on' unit.

…/understanding what your core business is and managing it in that way and building your business strategy around that… is what will lead to a sustainable outcome …/it's just part of how you deliver value to your shareholders…/sustainability, it's everyone's responsibility…/

However, there were differing accounts of how far individual companies had progressed with this approach.

…/ how you build it into your selection processes, how you build it into your KPIs, how you build it into the actual business plans of the business units... they do that informally at the moment… we've ticked the boxes on health, safety, environment, community contribution, but it's not coordinated…/

Without taking a holistic approach to sustainability, the tangible elements such as profitability, financial stability, marketing and manufacturing may be addressed, but the intangible value that can be brought to bear for the company and its stakeholders are missed.

…/The intangible stuff is the stuff around the corporate social responsibility portfolio, it's risk management, it's all those bits that you think might have an impact but you're not really sure they do or what that impact is…/it's good to teach the nuances around it and the grey area around it, in addition to the pure black-and-white of what it is and how would you do it.../

One of the key issues associated with sustainability that emerged from the data is that of corporate reporting, pertaining to voluntary versus mandatory transparency, the extent to which corporations should be reporting on their actions and in what format. Amongst the participants, there were varying views on the place of reporting in the sustainability context.

…/reporting is not the issue, it's the people who set targets the people report on, that's the issue. Reporting is just a product. Reporting is a last link in the chain. It's the corporate strategy that drives the behaviour that set targets that you work to that your report on. …/A sustainable development reporting position is that it's about storytelling…it's actually really understanding your actions…/

There was concern about whether the plethora of reports developed actually addresses the issue of sustainability and what their impact is.

…/all the reports say, our environmental performance, our social performance, our economic performance. No one actually talks about our sustainable development.../ Then we made it environment health safety and community and eventually they have now morphed into this social responsibility report…/we have it [social responsibility report] available on our web site… …you wonder who is taking any notice of it…/

Whilst there are regulatory mandates (e.g., Section 299 (1) (f) of the Corporations Act

and Section 1013DA of the Financial Services Reform Act), reporting on sustainability and CSR in Australia is predominantly voluntary. However, it was envisaged that this may change with demand for greater transparency in the future.

…/probably in two or three years time the Australian government might say, look here is a reporting framework, which will be legislated…/the [Australian] Stock Exchange has been looking at this so the writing's on the wall, it's happening. And the smart thing is to get ahead… and that's what we're doing, 'A' because we believe in it but 'B' because we think it's inevitable.../

Armed with the background knowledge of participants' diverging connotations of the sustainability concept and organizational approach to sustainability challenges, we proceeded with the major focus of the project - to identify business requirements and expectations of MBA and other business graduates in the area of sustainability. In addressing the first objective, participants from the business organisations were asked to highlight some of the aspects of doing sustainability that they considered to be the most important for business students to gain in their business course. Although expressed in different ways, there was consensus that, 'sustainability strategy has to be a core business strategy'.

…/Sustainability is a non negotiable determinant of business success in the 21st century…/It's probably the realisation that doing sustainability is actually no different from doing good business…/license to operate …/work out how this concept of sustainability can be somehow implemented, integrated into our operating businesses.../students need to understand sustainability mechanisms (i.e. ISO 9000/14001) and EMS) from conception to implementation and beyond…/ Understanding the lifecycle of a particular element including site visits …/links between financial performance and non financial costs such as reputation and environmental footprint of the business have to be considered, and this requires new metrics -- but it does need to be based on a bottom line…/reporting and monitoring is a critical part of sustainability progress…/

Similarly, the views of business industry participants broadly mirrored those of graduate students in terms of the vital skills needed to be gained from a course on sustainability that will or have enabled them to develop sustainable business strategies. The student participants, most of whom also managed organisations, mentioned;

…/Practical skills and examples of where it has been done successfully or even not successfully and why... …/Triple Bottom Line approach…/ Frameworks, models and tools to be able to apply to a business to enhance the sustainability of the solution…/Where to look for resources and tools to help me make sound business decisions that take sustainability into account. Plus, more comprehensive decision making, taking into consideration a wider set of factors, i.e. TBL…/ ability to use frameworks and consider an integrated approach to business, projects etc. The case studies helped immensely as it provided real problems and real solutions that could be critically analysed…/aware of businesses that have integrated sustainability concepts into their business plans and be able to study these as models. You will need to be made aware of the outcomes of not taking the sustainability pathway…/Action Research Models…/

During one of the focus group forums, graduate students were also asked what values will a course (or has the course) on sustainability strategies and/or management provide them with? And what would impel or motivate them to enrol in a course on sustainability? There appear to be an interest in and strong value for business sustainability as evidenced from some of the participants' extracted responses.

…/EMS660 unit has enabled a stronger understanding on what I can do as a manager in improving the sustainability

strategies in my employment/organisation…/The value a course on sustainability strategies will provide is a greater understanding and awareness of this in making management decisions that plot the course of an organisation on the future viability of those decisions on the environment…/the course provided me with a more strategic picture and also understanding of some of the tools, methods and management theories. It changed my perception of a lot of areas with respect to sustainability…/Will give an extra dimension to underpin management direction…/Better decision support tools are needed such as *Triple Bottom Line* accounting and *Life Cycle Assessment* for projects and products…/[lecturer] piqued my interest in EMS when I was studying FM…/

There was recognition, though, that the business graduates could experience variation in corporate commitment to sustainability and also differing attitudes to their own studies of this issue.

…/Sometimes it [sustainability] does suffer from that association with buzzwords and also perhaps being said to me, 'oh, that's just something bleeding hearts are interested in.' You know, if you're a big greeny or something. And that might be why part of it hasn't really been taken up yet, here in Australia.

…/raise students' awareness that (A) it could be seen as a dirty word, (B) you can find a lot of people scoff at it and can't align that with making a profit, (C) if you just follow these things you might be seen to be disinterested in the main game, or just being a trouble maker…/

There was strong consensus that sustainability should be broadly integrated in business education programs and that failure to do so would result in graduates who were not fully equipped to deal with these issues in the business place.

…/These are things that are happening that are going to require people in businesses, whether they be engineers or accountants or lawyers or general business managers to suddenly start realising these issues are out there…/ it's a train coming down the track…/even if it's like a few units, everyone has to do it but there's an understanding of what true sustainability is about and how it can be applied to any business or industry…/It's got to happen otherwise they'll find when they go into workplaces in ten years time that this has become an important part of their performance…/

While the business practitioners acknowledged that they were not totally familiar with the structure of university business courses, nor were they educators, they were definite that sustainability should be incorporated into business school curricula at undergraduate and postgraduate levels and across courses.

…/ any MBA courses should have a philosophical unit on sustainability.../I don't think they should be optional…/need is for sustainability principles to be integrated into existing …/at least get them thinking about it.../It needs to be couched in the rationale for why are we doing this and why does it actually have value and why is it of interest…/it would be better if they could come in with a philosophical understanding of what sustainability is about. …/core business tools and management techniques taught in a manner that includes environmental and social sustainability considerations (e.g. is management accounting taught with inclusion of e.g. carbon tax, reputation risks, etc) …/

Another theme that emanates from the data was the recognition of the need for organisational drivers, of the need for leadership from the top and for sustainability champions within the corporation.

…/all these things never really get any traction unless the CEO and the executive team are sitting there going, 'this is how we going to do it', and the board is directing back…/ It has to be driven from the top-down. But that's in the initial

stages, to get traction within the business…/

The need for management leadership and for sustainability champions within the corporation as described by participants is no different to a university's attempt in infusing sustainability in curriculum development. It requires the support and involvement of the Executive Dean, Head of School and identification of sustainability champions among faculty members. The project grant and video conferencing arranged by ARIES with Professor Richard Welford (*University of Hong Kong*) was an effective means for engaging key senior faculty staff and decision makers in participative dialogue about how we go about creating greater awareness and appreciation of the complex issues of sustainability in business. The outcome of this is an on-going project in embedding sustainability into the MBA and other business programs.

The group of sustainability champions formed from the focus group sessions and in-depth interviews will provide future opportunities for partnerships with the corporate sector to develop Australian case studies and other initiatives. In providing a critical link between the sustainability context of business and curriculum offerings, industry participants have stressed the importance of students' exposure to and experience with real world examples.

…/operational case studies can be put on the screen but actually having the opportunity to talk to the hands on operators would add a new level of understanding (would require partnership with some willing business operations) …/

One of the outcomes from the findings in identifying and building relationships with champions in the corporate sector is the willingness of a participant from the focus group to partner with the GSB in allowing students to undertake an action research in the field with his corporation. The next section will discuss the lessons learned and implications from the findings of this exploratory study.

Discussion and implications

The findings as elaborated in the preceding section direct back to the literature and paradigmatic assumptions implicit in the body of knowledge on sustainability and more particularly, education about and for sustainability. The major themes that emerged from the data are (1) sustainability issues in business, and (2) education about and for sustainability. The sub-themes (categories) for the former include: diverse perception of sustainability concept; core business strategy requiring a holistic approach in business and education; corporate reporting; leadership and champions.

The concept of sustainability is extremely complex as surfaced from the findings of this exploratory project. Invariably as observed from our study, one cannot begin to commence a dialogue about embedding sustainability into the MBA and other business programs without having to come to grip with participants' variously conceived notions of sustainable development or sustainability. It 'means different things to different people, but it essentially fosters the view that human activities need to be undertaken in ways that support long-term economic growth, environmental protection, and social progress' (Rowland 2004, p.290).

Sustainable business focuses on 'triple bottom line' (Elkington 1997) outcomes and was defined as a 'company's ability to achieve its business goals and increase long-term shareholder value by integrating economic, environmental and social opportunities into its business strategies' (*Symposium on Sustainability* 2001, cited in; Wirtenberg, Harmon et al. 2007, p. 11). Kearins and Springett (2003) point out that the understanding of sustainable development has been contested, particularly on the grounds that the framing of the issue in some sections of the debate is ultimately about the preservation of a particular social order (Harvey 1996), premised on the possibility of responsible business action for the good of society.

Welford (1995) puts forward a more radical approach which involves the need for a distinct shift in business style based on the recognition 'of values at the global, organisational and individual levels' (p. 147). These values include smallness, wholeness, posterity, community and quality. Participants' diverse conceptualisations of sustainability appear to have encompassed these components and more, including value-laden perceptions as indicated by extract from the following comments:

> …/it's just part of how you deliver value to your shareholders…/needs to be couched in the rationale for why are we doing this and why does it actually have value and why is it of interest…/

Wheeler, Colbert and Freeman (2003) propose that these issues can be clarified by a focus on 'the creation of business value' as an integrating ground for the concepts of sustainability, CSR and the stakeholder approach to corporate business. Their notion, which involves embracing stakeholder notions of value, is that sustainability involves 'value creation on three dimensions: economic, social and environmental' (p. 17).

Participants' wide ranging notions of sustainability may well be attributable to what Gladwin et al., (1995) assert as incongruent paradigms—a traditional techno-centric position involving economic growth and technology based problem solving; and an eco-centric view involving changed behaviour and radical realignment of political and social systems. They advocate an integrative paradigm of sustain-centrism, a view promoting sustainable business which combines elements of both. Perhaps in reality, one's connotation of the concept that straddles between the conventional techno-centric and the complex adaptive sustain-centric paradigm is dependant upon one's organisational stage of progress towards sustainability (Hoffman 2001; Rowe 2006).

The findings indicate that the numerous concepts are deeply infused with complex interdependencies, multiple objectives and ingredients, and considerable 'moral thickness' (Williams 1985). No wonder some observers believe that the concept of sustainability will continue to be ideologically controversial and elusive (Beckerman. 1994; Gladwin, Kennelly et al. 1995). Perhaps, the 'one solution fits all' definition is futile as discovered in this study.

> …/sustainability…does not require, or even have, an exact definition that we can all agree upon. However this does not have to preclude or block action towards more sustainable outcomes…/there is no one size fits all - each organisation has to determine its magnetic north and define in what way it can best contribute to sustainable development, e.g. by corporate citizenship, transparency, eco-efficiency, new process technology etc…/

The findings echo the contention of some researchers that we should abandon our quest for a definitive concept of sustainability and accept 'various and more specific definitions matching the development, awareness and ambition levels of organizations' (Marrewijk 2003, p. 95) instead?

This study also provides an insight into how participants' organisations responded to the challenges of sustainability in holistic integration into core business strategy driven by reporting and leadership. Among sustainability practitioners in business there is acceptance of the need for a more holistic approach to sustainability, whether it is for integration into core business strategy (Bell and Morse 2005; Espinosa, Harnden et al. 2008) or for education (2007, p. 388).

> …/work out how this concept of sustainability can be somehow implemented, integrated into our operating businesses.../need is for sustainability principles to be integrated .../has to be core business strategy.../

Participating students also affirmed the necessity for holistic approach to business and their need for awareness 'of businesses that have integrated sustainability concepts into their business plans and be able to study these as models'. If universities are to be proactive in advancing sustainable development this will require a holistic view of academic organisations in addressing the issue. According to Adomssent et al., (Donaldson and Preston 1995; Carroll 1999): 'results can only be achieved with the aid of holistic, integrative project-based approaches, as only thus can systemic internal university processes run their course - thus allowing potential obstacles and success factors to be identified'.

A valuable insight, involving change towards sustainability by organizations, was that there can be a favourable inclination for managing the challenges of sustainability, coupled with avoidance of internal use of the terminology of 'CSR and sustainability'. Anything which could be reduced to characterisation as 'a faddish management tool' was seen by industry as counterproductive. In external reporting, however, there is a need to use the terminology and some saw the need to achieve greater clarity in meaning for the concepts and sought our input into that.

One unexpected insight gained of industry sustainability activities suggests that in some cases the practices are being driven by a reporting imperative, which, while it seems to be having some impact, nevertheless appears to us to put the cart before the horse. The underlying implication of this may be that it is impelled from stakeholder pressure (Porter and Kramer 2006), induced as an innovative core business strategy in sustainable development (Deegan 2002). Interpretations of the latter view are that this is due in part to 'license to practice' considerations (DiMaggio and Powell 1983; Tolbert and Zucker 1983; Hoffman 2001; Rowe in press) or superficial compliance to institutional mimetic isomorphism of benchmarking to industry trend without the intrinsic embedded value that supports sustainability (Orr 2002; Holdsworth, Bekessy *et al.* 2006).

On *EfS,* the overall data suggests that there was strong support for sustainability to be addressed in core units within all business school curriculum and support also for this content to be core also in other professional courses such as engineering, planning and architecture to support the culture and holistic nature of the systems for doing sustainability. These results resonate well with the body of knowledge (Marshall and Harry 2005; Aspen CBE 2007) that sustainabilility and sustainable development are becoming mainstream concepts in the academic, business and policy arenas (Ethical Corporation 2006).

However, as observed from this study, the interpretation and application of these ideas varies widely. It's not surprising that the greatest challenge encountered by business schools is the mainstreaming of sustainability into core curriculum (Mah J., Hunting SA. et al. 2006). In order for sustainability courses to become more common components of business curricula, Marshall and Harry (2005, p. 192) advocate the need to develop 'integrative conceptual frameworks that attend to multi-level, systemic aspects of sustainability and that are accessible to a broad student audience'. The analysis in this project uncovered the call for holistic approach to embedding sustainability into education and the critical link with the requirements of the business industry. The views of this participating student hit the nail on its head with the following quote.

> …/To ensure that such a skill develops - there needs to be definite link between the course/school/ university and the industry/ organisation, so as these so called methods of sustainability can be seen in action not just read from a book or heard from a lecturer…/

The process of approaching both graduate students and more particularly industry practitioners did identify industry champions

who expressed willingness to continue to interact with us. As a result, the Governance and Corporate Social Responsibility Research Unit is establishing a data base of contacts. This is expected to be used to form a small advisory group with wider catchment than the previous interaction with the business sector. The contacts developed contributed to a Business Symposium in September 2006, organised by the School and the Research Unit. Results of the preliminary analysis of the data collected within this introductory project were provided in that symposium.

The interaction with business as a result of this project was an extremely valuable aspect of this study. One of the significant outcomes was the building of partnership with an identified industry champion in an on-going research involving student projects within the corporation. This is a unique opportunity for students to 'go out there' and be immersed in experiential action learning about the complex issues of sustainability in the real world. New curriculum pedagogy (e.g., critical reflection journal) had to be developed to assess students' experiential learning for EMS 660 which has been revamped and renamed *Sustainability Management Strategy 660* to better reflect its content and focus.

For tertiary education a two-way engagement with industry is mutually beneficial. The information obtained from research can be used to inform both curriculum development and provide feedback into the organisations to inform organisational change strategies toward sustainability. For instance, research being conducted on the origins and use of terminology in the area of CSR/Sustainability was welcomed as input to inform the ongoing pressure for accountability and reporting. It demonstrates the value of backing teaching with research and the integration of the two to achieve valuable programs for students.

Conclusion

As a preliminary study of a larger ongoing project, this research provided deeper understanding of the needs of the students, staff and business, and built relationships with internal (staff) and external (corporate sector) champions. This will assist in developing a leading edge educational course about and for sustainability that could be delivered through a number of centres of excellence throughout Australia.

Critical reflection from our initial experiential learning provided valuable direction in developing a flexible plan of critically informed action to embed *EfS* (through improved ongoing action learning, observation and reflection on our sustainability journey). We underestimated the impact of this exploratory project within the tertiary education setting through advocacy by a small but committed group of champions, able to exert influence over attitudes and educational input.

For tertiary education a two way engagement with the corporate sector, where you have something to give as well as wanting support, is important. In this case one such engagement is the current partnering with a company to enable students to conduct a joint project on community volunteering, thus providing an opportunity to apply their knowledge and learning in sustainability strategy in the field. This illustrates the value of backing teaching with research and the integration of the two to achieve valuable programs for current and future business leaders in the 'real world'.

Business schools need to tread carefully in their advocacy of processes for sustainability to ensure that in doing so we avoid the "management fad" label for this very important issue. In this respect 'recipes' and 'ten simple steps' need to be avoided and complex issues and unique solutions involved for the individual corporation highlighted through pragmatic cases and projects.

Business sees the need for education about and for sustainability as being broader

than business schools and has put the case for integration across all disciplines such as accounting, law, health, engineering, architecture, policy and planning.

The formation of new, and the development of existing, partnerships in the corporate sector has led to students being more aware of what action businesses are taking to address sustainability and realise that there is a demand for graduates with skills to help business achieve this. These partnerships are beginning to close the gap between current strategies and future plans for sustainability in the 'real world' and education about and for sustainability in the classroom.

References

Adams, CA and Larrinaga-González, C 2007, 'Engaging with organisations in 4pursuit of improved sustainability accounting and performance', *Accounting, Auditing & Accountability Journal,* vol. 20, no. 3, pp. 333-355.

Adomssent, M Godemann, J and Michelsen, G 2007, 'Transferability of approaches to sustainable development at universities as a challenge', *International Journal of Sustainability in Higher Education,* vol. 8, no. 4, pp. 385-402.

Aspen CBE 2007, *Beyond grey pinstripes 2007-2008: Preparing MBAs for social and environmental stewardship*, Aspen Institute Centre for Business Education, <http://www.beyondgreypinstripes.org/rankings/index.cfm>.

Ballard, D 2005, 'Using learning processes to promote change for sustainable development', *Action Research*, vol. 3, no. 2, pp. 135-156.

Beckerman, W 1994, 'Sustainable development: Is it a useful concept?', *Environmental Values*, vol. 3, no. 3, pp. 191-209.

Bell, S and Morse, S 2005, 'Holism and understanding sustainability', *Systemic Practice and Action Research*, vol. 18, no. 4, pp. 409-246.

Benn, S and Dunphy, D (in press), 'Action research as an approach to integrating sustainability into MBA Programs: An exploratory study', *Journal of Management Education*.

Bennis, W and O'Toole, J 2005, 'How business schools lost their way' *Harvard Business Review*, vol 83, no. 5, pp. 96-104.

Carroll, AB 1999, 'Corporate social responsibility', *Business and Society*, vol 38, no. 3, pp. 268-295.

Deegan, C 2002, 'The legitimising effect of social and environmental disclosures—A theoretical foundation', *Accounting, Auditing & Accountability Journal*, vol 15, no. 3, pp. 282-311.

Denzin, NK and Lincoln, YS (eds.) 1994, *Handbook of qualitative research*, Sage, Thousand Oaks.

DiMaggio, PJ and Powell, WW 1983, 'The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields', *American Sociological Review*, vol 48, pp. 147-160.

Donaldson, T and Preston, LE 1995, 'The stakeholder theory of the corporation: Concepts, evidence and implications', *Academy of Management Review*, vol. 20, no. 1, pp. 65-91.

Dunphy, D, Griffiths, A and Benn, S 2007, *Organisational change for corporate social responsibility: a guide for leaders and change agents of the future*, Routledge.

Easton, G Easton, A and Belch, M 2003, 'An experimental investigation of electronic focus groups', *Information & Management*, vol 40, pp. 717-727.

Elkington, J 1997, *Cannibals with forks: The triple bottom line of 21st century business*. Capstone, Oxford.

Espinosa, A Harnden, R and Walker, J 2008, 'A complexity approach to sustainability—Stafford Beer revisited', *European Journal of Operational Research*, vol. 187, no. 2, pp. 636-651.

Ethical Corporation 2006, *Corporate responsibility and education*, Ethical Corporation Special Report, London, <http://www.ethicalcorp.com/cre/docs/EC%20-

%20Special%20Report%20Education.pdf >

Ethical Corporation 2007, *Business education special report 2007*, Ethical Corporation, .London <http://www.ethicalcorp.com>.

Ferreira, JA Ryan, L and Tilbury, D 2007, 'Mainstreaming education for sustainable development in initial teacher education in Australia: A review of existing professional development models', *Journal of Education for Teaching*, vol. 33, no. 2, pp. 225-239.

Forrest, E 1999, *Internet Marketing Research,* McGraw-Hill, Sydney.

Gladwin, TN Kennelly, JJ and Krause, TS 1995, 'Shifting paradigms for sustainable development: Implications for management theory and research', *Academy of Management Review*, vol. 20, no. 4, pp. 874-907.

Guba, EG and Lincoln, YS 1994, 'Competing paradigms and qualitative research' in *Handbook of qualitative research*, NK Denzin and YS Lincoln (eds.) Sage Publications, Thousand Oaks, pp. 105-117.

Guide, VDR and Wassenhove LNV 2007, 'Dancing with the devil: Partnering with industry but publishing in academia', *Decision Sciences*, vol. 38, no. 4, pp. 531-546.

Harvey, D 1996, *Justice, nature and the geography of difference*, Blackwell, Oxford.

Henderson, J McAdam, R and Leonard, D 2006, 'Reflecting on a TQM-based university/industry partnership', *Management Decision*, vol. 44, no. 10, pp. 1422-1440.

Herro, A 2007, 'Sustainability is growing theme of business schools', *World Watch,* vol. 20, no. 1, p. 7.

Hoffman, A 2001, *From heresy to dogma: An institutional history of corporate environmentalism*, Stanford University Press, Stanford.

Holdsworth, S Bekessy, S Mnguni, P Hayles, C and Thomas, I 2006, 'Beyond leather patches: Sustainability education at RMIT University' in *Australia, Innovation, Education and Communication for Sustainable Development*, Lang Publishing, Frankfurt, pp. 107-128.

Kearins, K and Springett, D 2003, 'Educating for sustainability: Developing critical skills', *Journal of Management Education,* vol. 27, no. 2, pp. 188-204.

Kemmis, S and McTaggart, R 2000, 'Participatory action research', *Handbook of qualitative research*, NK Denzin and YS Lincoln (eds.), Sage publications, Thousand Oaks, pp. 567-605.

Lange, EA 2004, 'Transformative and restorative learning: A vital dialectic for sustainable societies', *Adult Education Quarterly,* vol. 54, no. 2, pp. 121-139.

Mah, J Hunting SA, and Tilbury, D 2006, Education about and for sustainability in Australian Business Schools: Business Schools Project - Stage 2. *A Report prepared by* Australian Research Institute in Education for Sustainability for the Australian Government Department of the Environment and Heritage.

Marrewijk, MV 2003, 'Concepts and definitions of CSR and corporate sustainability: Between agency and communion', *Journal of Business Ethics,* vol. 44, no. 2/3, p. 95.

Marshall, RS and Harry, SP 2005, 'Introducing a new business course: Global business and sustainability', *International Journal of Sustainability in Higher Education*, vol. 6, no. 2, pp. 179-171.

Martin, S 2005, 'Sustainability, systems thinking and professional practice', *Systemic Practice and Action Research,* vol 18, no. 2, pp. 163-171.

Moustakas, C 1994, *Phenomenological research methods*, Sage, Thousand Oaks.

Newby, R Soutar, GN and Watson, J 2003, 'Comparing traditional focus groups with a group support systems (GSS) approach for use in SME research', *International Small Business Journal*, vol. 21, no. 4, pp. 421-433.

Orr, DW 2002, 'Four challenges of sustainability', *Conservation Biology*, vol. 16, pp. 1457-1460.

Parker, LD and Roffey, BH 1997, 'Methodological themes back to the drawing board: Revisiting grounded and the everyday accountant's and manager's reality', *Accounting, Auditing & Accountability Journal*, vol 10, no. 2, pp. 212-247.

Porter, ME and Kramer MR 2006, 'Strategy & society: The link between competitive advantage and corporate social responsibility', *Harvard Business Review*, vol. 84, no. 12, pp. 78-92.

ProSPER.Net, *Promotion of sustainability in postgraduate education and research network*, <http://www.ias.unu.edu/sub_page.aspx?catID=108&ddlID=592>.

Rowe, A 2006, 'Looking through the Chinese *lens* of corporate environmental management', *Journal of International Business Strategy*, vol. 4, no. 1, pp. 105-112.

Rowe, A (in press), 'Evolutionary epic of *greening* Chinese dragons' management institutions', *International Journal of Business Research*.

Rowland, G 2004, 'The concept of sustainability in the evolutionary guidance of an educational institution', *Systemic Practice and Action Research*, vol. 17, no. 4, pp. 285-296.

Strauss, AL 1987, *Qualitative analysis for social scientists*, Cambridge University Press, New York.

Symposium on Sustainability 2001, Symposium on Sustainability - Profiles in Leadership. New York.

The Economist 2008, *Just good business,* Jan 17th 2008, <http://www.economist.com/specialreports/displaystory.cfm?story_id=10491077>

Tilbury, D Adams, K and Keogh, A 2005, 'A national review of environmental education and its contribution to sustainability in Australia: Business and industry education', *Department of the Environment and Water Resources* and *Australian Research Institute in Education for Sustainability*, Canberra.

Tilbury, D Crawley, C and Berry, F 2005, 'Education about and for sustainability in Australian business schools', *Australian Research Institute in Education for Sustainability* and *Department of the Environment and Heritage*, Canberra.

Tolbert, PS and Zucker, LG 1983, 'Institutional sources of change in the formal structure of organizations: The diffusion of civil service reforms 1880-1935', *Administrative Science Quarterly*, vol 23, pp. 22-39.

WCED 1987, *Our common future,* World commission on environment and development, Oxford University Press, New York.

Weitzman, EA and Miles, MB 1995, 'Code based theory-builders: NUDIST 3.0' in *Computer programs for qualitative data analysis,* Sage Publications, Thousand Oaks, pp. 238-265.

Welford, R 1995, *Environmental strategy and sustainable development: The challenge for the 21st century*, Routledge, London.

Welsh, MA and Murray, DL 2003, 'The e-collaborative: Teaching sustainability through critical pedagogy', *Journal of Management Education*, vol. 27, no. 2, pp. 220-235.

Wheeler, D Colbert, B and Freeman, RE 2003, 'Focusing on value: Reconciling corporate social responsibility, sustainability, and a stakeholder approach in a network world', *Journal of General Management*, vol. 28, no. 3, pp. 1-28.

Williams, B 1985, *Ethics and the limits of philosophy*, Harvard University Press, Cambridge.

Wirtenberg, J Harmon, J Russell WG, and Fairfield, KD 2007, 'HR's role in building a sustainable enterprise: Insights from some of the world's best companies', *HR. Human Resource Planning*, vol. 30, no. 1, pp. 10-20.

Food miles–no simple measure

27 March 2008

Source: *Environmental management News*
http://www.environmentalmanagementnews.net

According to UK media reports, the concept of 'food miles' that has gained ground in the UK is oversimplified as it does not take into account the greenhouse emissions produced during the manufacturing process. It follows a commitment from Federal Agriculture Minister Tony Burke earlier this month to expose the inaccuracies of the food miles campaign.

'The idea that only local produce is good is under attack. There is growing evidence to suggest that some air-freighted food is greener than food produced in the UK', says the article *How the myth of food miles hurts the planet;* published in the UK publication *The Guardian* earlier this week.

The Guardian cites the example of green beans grown in Kenya and air-freighted to Britain. Professor Gareth Edwards-Jones from *Bangor University* in Wales said that beans in Kenya are grown using manual labour. Tractors are not used, they use cow muck as fertilizer and they have low-tech irrigation systems.

In comparison, beans produced in Britain are grown in fields on which oil-based fertilisers have been sprayed. The beans are also ploughed by tractors that burn diesel.

UK retailer *Tesco* made moves last year to develop carbon footprint labels and teamed up with *Carbon Trust*, an independent but publicly-funded agency, to calculate the carbon profile of 30 of its products. It started using labels on these products in October.

A spokesperson from *Tesco* told *The Guardian,* they may remove plane labels from products in the future – stickers that are used to show if a product has been air-freighted. 'What people are actually interested in is the amount of carbon that is emitted during a product's manufacture and import', said the spokesperson.

Earlier this month, Federal Agriculture Minister Tony Burke told the *Australian Bureau of Agricultural and Resource Economics* conference in Canberra that the European food miles campaign is 'nothing more than protectionism and a campaign deliberately designed to deceive'.

He added 'transport costs are a very small portion of greenhouse emissions of the total value chain issue in terms of greenhouse emissions and its impact on climate change'.

He said the Federal Government would expose the flaws in the campaign 'so that consumers are not conned by a campaign designed to make them think that they're being environmentally friendly, but they're actually been given the wrong indicators'.

Accounting for sustainability

13 March 2008

Source: *Global Accounting Alliance*

The *Global Accounting Alliance* (GAA) and its constituent member institutes are now formally members of the *Prince of Wales Accounting for Sustainability Forum* from which a report of the same name has been produced. The *Accounting for Sustainability Forum* is made of businesses, investors, public sector organizations, accounting firms, and other relevant stakeholders.

The forum will meet annually with the next meeting in December 2008 a conference-type event with a keynote speech from the Prince.

The forum is coordinated by the Institute of Chartered Accountants in England & Wales and includes all members of the GAA together with the Association of Certified Chartered Accountants, the Chartered Institute of Management Accountants and the Chartered Institute of Public Finance and Accountancy

Emissions trading and other related policy matters

An information paper from CPA Australia provides an overview of the proposed

emissions trading scheme in Australia and other complementary policy initiatives designed to tackle climate change.

The paper seeks to inform members and other interested parties about the implications of climate change, and the effects that government policies and strategies— particularly the introduction of an emissions trading scheme— may have on business.

AGL Starts emissions trading on bilateral basis

20 May 2008

Source: *Environmental Management News*

AGL sold 10,000 tonnes of *Australian Emissions Trading Units* to *Westpac* at $19 a tonne, ahead of the formal development of the *Emissions Trading Scheme* (ETS), which is due to commence in 2010.

The sale is due for settlement in February 2012 under the terms of the voluntary agreement that was recorded on May 13.

The market price of $19 a tonne was determined after AGL commissioned law firm *Minter Ellison* to design the documentation around which emissions units will be traded. A range of different ETS design scenarios was taken into account when developing the documentation.

New report by Ernst & Young

Source: International CSR Site
http://www.enviroreporting.com/

Transparency in assurance reports on corporate responsibility disclosures can be greatly improved. Major differences in terms of topics discussed and the lack of information create confusion. This makes comparison between reports impossible, both those issued by auditors and those issued by non-auditors. In one-third of all reports, test criteria go unmentioned, as do the assurance standards used.

These are some of the conclusions Ernst & Young draws from its recent independent research. It reviewed 120 assurance reports on corporate responsibility reports of European businesses. In its review, Ernst & Young focused on aspects that are essential when providing assurance on a corporate responsibility report, such as scope, criteria, independence and assurance standards used.

In her foreword to *Transparency in assurance reports on corporate responsibility reporting,* Dr Nancy Kamp-Roelands, Director of the CSR Knowledge Centre at Ernst & Young, reminds us that in a modern society stakeholder focus is more than ever on the 'social and environmental impact of organisations.' The report, an outcome of research into the 'common practices for the assurance of corporate responsibility reports' can be found at http://www.ey.nl/download/publicatie/MVO/TransparencyAssuranceReportsCSR.pdf

Main stream sustainability reporting

Sustainability reporting is 'driven by the potential business value generate through enhanced stakeholder reporting and communication', says the author of *Sustainability Reporting: A guide*, KPMG's recent release for 'directors and senior executives on this important and rapidly developing issue.' The 33-page report broaches questions such as what is sustainability reporting and why report? A PDF file is available at http://www.group100.com.au/publications/kpmg_g100_SustainabilityRep200805.pdf

BHP Billiton's CSR reporting award

Friday, 23 May 2008

The *Association of Chartered Certified Accountants'* (ACCA) judged BHP Billiton's 2007 Sustainability Report the best of the year's applicants. Upon announcing the *Australia & New Zealand Awards for Sustainability Reporting* on May 20, the judges encouraged more companies to have their reports independently assured and address issues such as supply chain management.

A panel of eight judges, including Sustainable Asset Management (SAM) research manager Francis Grey and research analyst Dr Ian Woods from AMP, assessed

50 reports. Other awards include commendations for:

Excellent report structure	Boral
Supply chain and product stewardship reporting	Fuji Xerox Australia
Best early reporter	Transurban
Best local report from a global organisation	Vodafone New Zealand
Best financial services sector report	ANZ Bank
Best public sector report	Department of Families, Housing, Community Services and Indigenous Affairs
Best property sector report	Investa Property Group
Best water sector report	Watercare Services
Best SME report	VicSuper

The report is available at http://www.hhh.com—BHP's current sustainability report is available online at http://www.bhpbilliton.com/bb/sustainableDevelopment.jsp

New business and environment frontier

The next generation of corporate greening has arrived. Forward-looking companies are producing tangible business benefits from environmental efficiency. In this inaugural review, *Environmental Defense Fund* highlights some of the latest, most compelling examples of the new business as usual.' The report highlights proven ways that a company can take environmental management to the next level and generate business and environmental benefits. The report includes innovations for the shipping, retail, banking, food and agriculture industries. The report is located at the following web address: http://www.edf.org/documents/7904_innovationsreview2008.pdf

PhD Completed – Stacey Cowan

Environmental reporting and the impacts of mandatory reporting requirements

Stacey Cowan completed her Doctor of Philosophy at RMIT University in 2007 under the supervision of Professor Craig Deegan. Professor Carol Adams of La Trobe University and Professor Gary O'Donovan of the University of Tasmania examined the thesis.

The thesis examined the strategic and potentially legitimising nature of voluntary environmental reporting. A greater understanding of the strategic nature of voluntary environmental disclosures was necessitated due to such disclosures being identified as (1) a strategic tool for altering the perceptions of users regarding the environmental performance of an entity (O'Donovan, 1999), (2) being of value to users for environmental performance information (Collison, Lorraine & Power, 2003), (3) criticised by previous authors regarding the quality of such disclosures (Hughes, Anderson & Golden, 2001; Deegan & Gordon, 1996; Deegan & Rankin, 1996; Tilt, 1994), although (4) supported by industry on the grounds that there is no evidence that voluntary reporting has not been successful in providing environmental performance information to users (Australian Industry Group, 1999; Parliamentary Joint Committee on Corporations and Financial Services, 2006) and (5) presented in the annual report alongside mandatory disclosures such as those required by s. 299(1)(f) of the Corporations Act.

First, the thesis examined the relationship between emission levels on the National Pollutant Inventory (NPI) and the quantity of total voluntary environmental disclosures, voluntary emission disclosures and positive voluntary environmental disclosures in annual reports. Second, an examination of changes in the quantity of disclosures discussing compliance with the NPI and or research (for example, Deegan & Gordon 1996; Deegan & Rankin, 1996; Deegan, Rankin & Voght, 2000), those reporting non-compliance had no higher disclosures concerning pollution emissions was undertaken.

Taking into consideration the findings relating to the strategic nature of voluntary disclosures, the thesis then examined the potential of such disclosures to impact upon the usefulness of mandatory annual report disclosure requirements. This was undertaken by investigating whether significant differences existed between environmental disclosure practices in the voluntary sections of annual reports for corporations reporting non-compliance, and those not reporting non-compliance, in the directors' report pursuant with the requirements of s. 299(1)(f) of the (then) Corporations Law.

The findings suggested that, for the sample corporations, a change in environmental regulation may have been an impetus for changes in voluntary environmental disclosure practices in annual reports. Disclosures were identified as being discretionary, and potentially reactive to changes in environmental regulation, with a significant increase in the quantity of voluntary disclosures relating to the NPI and in the number of corporations making voluntary emission disclosures during the initial NPI reporting periods. This finding may also suggest, however, that voluntary disclosures, although discretionary, may provide some indication of the corporation's actual environmental activities and provides some support for industry arguments to maintain a voluntary environmental disclosure system.

A comparison of the quantity and nature of voluntary disclosures for corporations required to report non-compliance with, and those reporting no non-compliance with, environmental regulations in the directors' report found no significant differences in disclosure practices between the two groups; that is, in contrast to the findings of previous

propensity for either greater quantities of voluntary environmental disclosures or positive voluntary environmental disclosures. The findings suggest that the

limitations faced by s. 299(1)(f) in its early years may have resulted in it not being perceived as a legitimacy threat by the sample corporations or as a lesser threat than others such as the NPI.

Questions remain as to whether s. 299(1)(f) can produce the outcomes proposed at its inception. Overall, taking into consideration the discretionary nature of voluntary environmental disclosures, and that s. 299(1)(f) has sufficient limitations to suggest it is not a threat to corporate legitimacy (and perhaps not taken seriously by corporations), concern remains as to the quality of Australia's annual report environmental reporting system and the potential for the existence of voluntary environmental disclosures in the annual report to reduce the usefulness of an already questionable mandatory disclosure system to users.

References

Australian Industry Group (1999). Information to Assist in Complying with Section 299(1)(f) Corporations Law: Mandatory Environmental Reporting, September.

Collison, D., Lorraine, N. & Power, D. (2003). An exploration of corporate attitudes to the significance of environmental information for stakeholders. *Corporate Social Responsibility and Environmental Management* 10, 199-211.

Deegan, C. & Gordon, B. (1996). A study of the environmental disclosure policies of Australian corporations. *Accounting and Business Research* 26, 187-99.

Deegan, C. & Rankin, M. (1996). Do Australian companies report environmental news objectively? An analysis of environmental disclosures by firms prosecuted successfully by the Environmental Protection Authority. *Accounting Auditing and Accountability Journal* 9, 52-69.

Deegan, C., Rankin, M. & Voght, P. (2000). Firms' disclosure reactions to major social incidents: Australian evidence. *Accounting Forum* 24, 101-30.

Hughes, S.B., Anderson, A. & Golden, S. (2001). Corporate environmental disclosures: are they useful in determining environmental performance? *Journal of Accounting and Public Policy* 20, 217-40.

O'Donovan, G. (1999). Managing legitimacy through increased corporate environmental reporting: An exploratory study. *Interdisciplinary Environmental Review* 1, 63-99.

Parliamentary Joint Committee on Corporations and Securities (2006). Corporate responsibility: managing risk and creating value, Commonwealth of Australia, Canberra.

Tilt, C.A. (1994). The influence of external pressure groups on corporate social disclosure. *Accounting, Auditing & Accountability Journal* 7, 47-72.

Call for Papers

Second Italian CSEAR Conference on Social and Environmental Accounting Research

17 - 19 September, 2008
Rimini Campus, University of Bologna

The Department of Management at the University of Bologna and the Faculty of Economics at Rimini announce the 2nd *Italian CSEAR Conference on Research into Social, Ethical and Environmental Accounting*, in Rimini.

The main objective of the Conference is to provide a forum for discussion and further enhancement of research in this field. The conference will provide an opportunity for academicians, PhD students and professionals in social and environmental accounting to present their research projects, to discuss their preliminary findings and full papers in a supportive and interactive atmosphere. As Rimini is an interesting tourist area, papers about social, ethical, and environmental accounting on tourism enterprises are welcomed.

The conference will be held in the languages of Italian and English and during the final panel session a translator will be available. Papers presented during the Conference will be published in *Economia Aziendale 2000 web*.

An *Academic Scientific Committee* was appointed and consists of Professor Rob Gray and Professor Jan Bebbington, University of *St Andrews*, UK, and Professor Antonio Matacena and Professor Maria-Gabriella Baldarelli, *University of Bologna*.

Professor Carol Adams, Professor of *Accounting and Sustainable Development Strategy* and Deputy Dean of the *Faculty of Law and Management* at *La Trobe University*, Australia, will be the key plenary speaker at the conference.

A call for papers was issued, with abstracts (approximately 500 words) due by 20th July 2008. Authors will be notified of acceptance of their papers by 30th July 2008 with final papers due by 2nd September 2008.

The abstract or first page of the paper must contain the following information:

1. Title
2. Author(s) and affiliations
3. Contact information
4. Specifications (complete papers, papers in progress, ideas for research project, thesis in progress)
5. Abstract

E-mail abstracts and full papers to: csear2008@rimini.unibo.it

Inquiries concerning general information about the conference should be directed to: Professor Maria-Gabriella Baldarelli at csear2008@rimini.unibo.it
Tel: +39 0541/434124

For further information please see the conference web site at: http://www.rimini.unibo.it/CSEAR2008/index.html

---

11th Annual Conference of EMAN

October 6-7 2008 Budapest

Sustainability and corporate responsibility accounting–Measuring and managing business benefits

Hosted by the *Institute for Environmental Sciences* Corvinus University of Budapest
The conference will focus on the assessment of business benefits that can be realized through improvements towards sustainability and CSR performance. Specific topics addressed in the conference will include:

- Measuring business benefits of sustainability and CSR environmental benefit accounting tools and experiences for CSR and sustainability performance measurement in EMA
- Measuring the contribution of environmental performance to corporate value

- Sustainability issues in EMA
- New methods and procedures in environmental accounting
- Social performance and business success
- Stakeholder influence on EMA
- Sustainability accounting at the macro level (evaluation of environmental amenities, and indicators of development)
- New theoretical contributions to the field of environmental accounting
- Country studies, case studies, surveys and empirical analyses of innovative approaches.

Call for abstracts

Contributions are invited from researchers and practitioners. Download the template for your abstract from http://enman2008.uni-corvinus.hu. Email your abstract as PDF to eman2008@uni-corvinus.hu with "EMAN 2008 Abstract - [your name]" in the subject and contact details and title in the body.

Dates

Abstracts: May 31
Extended Abstracts: August 31,
PowerPoint slides: September 30.

All correspondence to: Gábor Harangozó gabor.harangozo@uni-corvinus.hu

Venue: Institute for Environmental Sciences, Corvinus University of Budapest
Follow up conference—October 8 *Sustainable Consumption* Organised by Gyula Zilahy of the *Hungarian Cleaner Production Centre*. Separate registration is needed gyula.zilahy@unicorvinus.hu

---

EMA network

Following the successful publication of the Environmental Management Accounting Network's series of books of leading papers on *Environmental Management Accounting* by Springer Publishers. With the fifth *Environmental Management Accounting for Cleaner Production* currently in print, we call for papers for the sixth book in this series: *Environmental management accounting and sustainable supply chain management.*

The principal theme of this book is *EMA and sustainable supply chain management;* the theme of last year's EMAN-Europe conference in Helsinki. Following our usual practice we offer a channel for publication of papers on relevant and worthwhile aspects of environmental and sustainability accounting and reporting. We therefore include a refereed and edited selection of the best papers presented at the two EMAN conferences in 2007 and other papers related to the topic of EMA.

Theoretical papers or broad empirical studies should normally be between 5 & 7,000 words, and papers containing case studies between 3 & 5,000. To publish a high quality publication, all papers will be double-reviewed. Papers should be original and make clear their relevance to accounting and sustainable supply chain management, or sustainability and environmental management accounting; or to managerial practice and or academic significance. Papers must follow the *submission guidelines* available on the EMAN website **www.eman-eu.net.**

To publish the book as promptly as possible, we ask you to email your full paper, including figures and appendices, as a Word document attached to**:** **submissions@uni-lueneburg.de**.
