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Contents **Page No.**

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EDITORIAL

New years greetings and welcome to the last edition of the APCEA News Journal for 1999. This is also the last edition for which I will be editor. For the year 2000 the News Journal will be based at Macquarie University in the capable hands of Lorne Cummings. I wish him a successful year.

As this is my last edition as editor I would like thank the News Journal's editorial board who have been helpful and diligent in the assistance they have provided this year.

In this edition the first article by Roger Burritt discusses recent developments on mandatory environmental reporting by Australian companies. Whereas in the last edition Roger provided some positive news on Australian government initiatives on voluntary environmental accounting, it appears there may be a backward step on mandatory environmental reporting. A case of one step forward, one step backward for environmental accounting?

The next two articles by Roger Burritt and Roger Martin provide discussion of recent reports produced by the Australian government on greenhouse gases. Charl de Villiers has provided a report card on environmental reporting in South Africa. He concludes that such reporting practices by listed companies are on the increase. Bronwynn Adamson has provided a discussion of a number of initiatives throughout Australia that are examples of where good environmental management is also financially beneficial to the business involved. Finally, Roger Burritt and I have provided a brief discussion of environmental accounting courses currently offered at the Australian National University and the University of Newcastle. The discussion also provides outlines of the two programs. Both Roger and myself are also willing to discuss the course developments with others interested in environmental accounting education.

Correction:

In the September issue Mark Lyster was listed as working at Ecos Corporation. Mark is now the Director of the Global Environmental Solutions group within Pricewaterhouse-Coopers in Sydney. Mark may be contacted at this location.

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ENVIRONMENTAL DISCLOSURES AND THE COMMONWEALTH OF AUSTRALIA COMPANY LAW REVIEW ACT 1998 – RECENT DEVELOPMENTS

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With effect from 1 July 1998 the Company Law Review Act 1998, amongst a range of other changes, introduced s.299 (1)(f) into the Corporations Law in Australia. The section provides as follows:

> "299(1) [general information about operations and activities]. The directors' report for a financial year must:...
>
> (f) if the entity's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory – details of the entity's performance in relation to environmental regulation."

In effect, as a result of a late Senate amendment proposed by the Australian Democrats, a limited disclosure obligation was imposed on all listed companies in Australia (Peel 1998, 41). At the time of this new section being passed into legislation speculation already existed that future annual report disclosure obligations might be extended to require reporting on performance in relation to other environmental issues, such as:

- Environmental policies
- Emission levels for pollutants
- Environmental management systems and waste management systems,
- Fines for breaches of environmental regulations,
- Results of environmental audits, and
- Levels of company capital expenditure on environmental initiatives (Deegan 1996, 123)

However, before a state of euphoria set in about the benefits of improved transparency, better lines of accountability and the inexorable rise of green accounting the government made it clear that it opposed the amendment that led to s.299 (1)(f) becoming law. The matter was referred to the Parliamentary Joint Statutory Committee on Corporations and Securities for inquiry. Of the 46 submissions received on this issue 40 opposed the additional disclosures and 6 were in favour. On balance, given the proclivity of the government on this matter, the finding that s.299(1)(f) should be deleted from the Act (Commonwealth of Australia 1999, 23) forth-with will be a disappointment to environmental accountants and all people concerned with trying to secure the integration of environmental responsibilities and accountabilities into the mindsets of company personnel – but, at the same time, the result will not be a surprise.

The inquiry summarized arguments put forward against disclosure under the following headings:

- Environmental reporting is inappropriate for the directors' report;
- Environmental performance should not be singled out for mandatory reporting;
- Voluntary reporting is preferable;
- The legal provision is vague and unclear;
- There is an absence of appropriate safeguards;
- Listed companies must already disclose material information;
- The provision does not apply to all legal structures and is inequitable; and
- The provision adds an unnecessary cost.

Recognition was given to some arguments in favour of the disclosure provision, but these

were not specified in terms of the specific arguments advanced. Instead, they were listed as criticisms made by particular, named green organizations – Greenpeace Australia, the Environmental Defender's Office Ltd, MAI Services Pty Ltd (and others).

The arguments are worth examining as they reflect some of the laggardly, reactive (rather than proactive, or triple bottom line oriented) perspectives on environmental issues that seem to be in evidence in Australia at present. For example, reference was made to the legislative approval being 'too doctrinaire', the directors' report as being an 'inappropriate venue for this type of information', 'incongruous, given the mainly financial basis of the Corporations Law', that 'there was no other regulatory reporting in s.299' (and so why should environmental reporting be singled out), that 'this could open the door to other reporting requirements', that voluntary rather than compulsory reporting would lead to a higher 'quality' of disclosure, that compulsion is 'inappropriate', that 'there was no safeguard against self-incrimination' and, finally, that the information would be disclosed in any event if it was 'material'.

On the other hand, supporters of the provision argued that voluntary reporting is inadequate, companies have not done the right thing and must be compelled to report, that a level playing field will be created in reporting costs, that only companies with a problem will have something to hide, that the public has little information about company compliance with environmental laws, and that (undisputably) Australian company environmental reporting has been poor.

As we move away from this brief excursion into environmental disclosures by listed companies in Australia based on compliance with legislation, it is salutary to note the logic of the Parliamentary Joint Standing Committee (PJSC) in drawing up its conclusions.

First, the majority of views expressed carried the day. "The PJSC noted and accepted the almost total unanimity of view [that it was inappropriate for the Corporations Law to require inclusion in the annual directors' report of details of performance in relation to environmental regulation] ...from the Australian financial and legal communities." Environmental reporting is a matter for environmental law, not corporations law. Never the two shall meet.

Second, no progress can be made with one type of reporting issue unless all other types of reporting issue are addressed at the same time. "The PJSC asks why the provision singled out environmental performance to the exclusion of other worthwhile performance indicators... Presumably this means that performance in, for example, taxation regulation or occupational health and safety regulation are less important..." Pity anyone with a view that triple bottom line reporting should be a requirement and that the annual report is a good place for such disclosure. Holism, integration and the three pillars of sustainable development do not appear to have entered the psyche of the Australian financial and legal communities.

Third, mandatory reporting of environmental performance may be unproductive. "Compulsion may lead to mediocrity and blandness in environmental reporting...the market will deal with those companies that lag." Academic scholarship, discovery, evidence and discourse on this issue appear to have counted for naught. Here it is of interest to note that of the 40 submissions seeking removal of the section on environmental disclosure only 4 academic articles are used to support arguments being put forward (one on environmental accounting – the NSW EPA report; two US environmental law articles; and one in-house article that tangentially mentions environmental issues). On the other hand, the 6 submissions from supporters of the existing provision chose to refer to more than 25 academic articles, peppered with environmental accounting references, in support of their views.

Fourth, the section does not apply to overseas operations, even though the Listing Rules for the Australian Stock Exchange do include provision for disclosure for material events

overseas. The PJSC argues, not that consistent reporting should be required by bringing overseas operations to account in environmental disclosures, but that as there is a potential here to limit and distort use of environmental performance reporting it is better to have no compulsory environmental reporting in the annual report at all.

In summary, attempts to provide greater transparency, accountability, and feedback for stakeholders about environmentally-induced financial performance as well as integrated information about environmental impacts added by companies have been checked. The section will be removed. The PJSC's final comment was that "The two submissions from environmental groups put different views to the above conclusions. These views, however, were not as persuasive as those from the business community." Here is the question for academics with a bent towards environmental accounting, reporting and accountability. Gather your evidence, muster support, build up the logic of your arguments, but will these have an impact? Evidently not on this issue, but we can only hope that exposure to the growing and substantial body of knowledge will eventually sway future decision makers on these issues.

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AUSTRALIAN GREENHOUSE GAS EMISSIONS POLICY UNDER THE SPOTLIGHT

Roger Burritt
APCEA (ANU).

The Climate Change Convention 3rd Conference of the Parties in Kyoto in December 1997 established legally binding targets for all developed countries to limit greenhouse gas emissions (subject to ratification of the Convention). Australia was one of the few countries that agreed to increase their emissions (by 8%) between 1990 and the 2008-12 target period. Most countries have agreed to try and reduce their emissions by about 5% over the period.

Martin (1998a) recently reviewed the final report of Australia's National Greenhouse Strategy published in December 1998. The report indicates very little in the way of direct action to reduce greenhouse gas emissions in Australia. Martin concluded that the National Greenhouse Strategy '...is trying to satisfy the Kyoto protocol at a minimum cost rather than make any concerted effort to alter the economy.' Perhaps with this thought in mind, the Senate of Australia decided on 11 August 1999, that there should be a comprehensive inquiry and report by the Senate Environment, Communications, Information Technology and the Arts References Committee. The inquiry is

to be completed by the first sitting day of the Senate in August 2000.

The following list of items included in the enquiry will remind members of the breadth of environmental issues related to greenhouse gas emissions reduction policy. Senator Allison of Victoria successfully moved the following motion:

"That the following matters be referred to the Environment, Communications, Information Technology and the Arts References Committee for inquiry and report by the first sitting day in August 2000:

The progress and adequacy of Australia's policies to reduce global warming, including:

(a) the effectiveness of Australian policies to reduce greenhouse emissions, in the light of Australia's commitments under the Framework Convention on Climate Change, including:

- (i) whether Australia is likely to meet its commitments under the framework convention December 1997 Kyoto Protocol, and the potential costs if it does not,
- (ii) the international response to the Framework Convention,
- (iii) the development of an effective international and domestic emissions trading system,
- (iv) the effectiveness of Australia's policies in comparison to international practice, such as emissions trading regimes and other measures,
- (v) the level, and greenhouse implications, of the direct and indirect economic incentives currently offered to both fossil fuel and renewable energy projects,
- (vi) the effectiveness of existing local, state and federal government policies and programs and their implementation,
- (vii) the economic, employment and development consequences of greenhouse abatement measures, with particular reference to regional Australia and the differential impact on each state and territory,
- (viii) the social and equity consequences of greenhouse abatement,
- (ix) the effectiveness of industry programs and policies in actual emission reduction,
- (x) Australia's contribution to global greenhouse gas abatement through export of alternative energy sources,
- (xi) additional measures, including, but not limited to, carbon trading,
- (xii) the adequacy and effectiveness of greenhouse gas emission inventories, and
- (xiii) the potential for carbon leakage associated with energy intensive industries to countries not party to the framework convention;

(b) whether Australian government programs and policies, both state and federal, are sufficient to provide for the development in Australia of emerging renewable energy, energy efficiency industries, the more efficient use of energy sources, the implementation of new energy technologies (eg fuel cells, hydrogen), including:

- (i) the effectiveness of Australia's efforts in relation to other governments, and
- (ii) the potential of these technologies to contribute to a reduction in Australia's greenhouse emissions;

(c) potential improvements to Australia's policies to reduce greenhouse emissions, in the light of available studies of:

- (i) current and projected fossil fuel use in Australia, taking into account the effects of current greenhouse reduction policies, trends in transport use of fuels, the use of energy by high-demand manufacturing, and changes to electricity ownership and generation,
- (ii) projected climate change impacts on Australian industries, such as fishing, tourism, agriculture and others,

(iii) estimated costs of such economic impacts, to assist cost-benefit analysis of various climate change abatement programs and policies,

(iv) the impact of current land management practices and policies on current and projected greenhouse emissions, and the potential for Australian agriculture in greenhouse abatement measures,

(v) the potential role for vegetation as carbon sinks and emission reduction by decreasing land clearing, and

(vi) the availability and effectiveness of other means of sequestration as an abatement option; and

(d) the projected effect of climate change on Australia's ecosystems including but not limited to:

(i) reef systems,

(ii) alpine areas, and

(iii) wetland areas.

The vote for an inquiry did not receive government support and was won 37:33 - a majority of 4 in favour.

Several mechanisms are being implemented or are under discussion to help to bring about emission reductions.

First, are voluntary agreements between industry and government known as the Greenhouse Challenge Program. This program, introduced in 1995, covers 13 main sectors in the economy, 224 organizations, is supported by many industry associations, and promises to deliver a significant reduction in CO_2 relative to expected end use emissions without the program in place.

Second, are environmental management systems. The most well known environmental management system is ISO 14001. Around 10,000 certificates have been issued world wide for compliance with this International Standard. An environmental management system (EMS) is a systematic means used by companies and other organizations to address their environmental issues. An EMS includes setting goals and priorities, assigning responsibilities, measuring and reporting results and externally verifying claims. They are voluntary in that any company has the choice whether to develop an EMS. Australia ranks 10th in the number of ISO 14001 EMS certificates issued, with 300 sites certified, or 12th if number of certificates per capita is taken as the measure of success (ENDS, 1999:10).

Third is an economic instrument, emissions trading. Part of the Kyoto outcome was to allow for the development of certain "flexibility mechanisms" (also known as "Kyoto mechanisms") to give countries more flexible and cost effective options for meeting their targets. A key flexibility mechanism is international emissions trading under which countries will be able to buy or sell part of their assigned emission allocation. Roger Martin has already commented about development of this instrument in Australia in the APCEA News Journal (Martin, 1998b). Progress with trading of greenhouse gas emissions remains slow and subject to controversy. At present several schemes are being discussed – one proposed by Australia, Canada, Iceland, Japan, New Zealand, Norway, Russia and the US, another emanating from the European Union, a third from the G77/China group. It is likely to be a number of years before a formalised broad-based emissions trading market is established. In the meantime, however, bilateral trades are already occurring. Information is available on the Australian Emissions Trading Forum web site by The Australian Future Exchange at http://www.aetf.net.au.

Fourth is another 'flexibility mechanism' the Clean Development Mechanism. The Clean Development Mechanism (CDM) allows governments or private entities in industrialized countries to implement emission reduction projects in developing countries in order to meet their emission objectives. The industrialized nations receive credit for these projects in the form of "certified emission reductions" (CERs). The purpose of the CDM is to promote "sustainable development" while

contributing to the objective of the Framework Convention on Climate Change (FCCC). Parties can begin accruing CER credits in 2000 and it is expected that 'sinks' will also be included in the measurement process for assessing abatement in CO_2 emissions. Few issues regarding the CDM have been resolved at this stage.

Finally is Joint Implementation (JI). Little need be said about JI at this stage because JI projects do not begin accruing credits until the start of the first commitment period in 2008.

Joint implementation (JI) allows FCCC Annex I countries, including Australia, to work together to meet their emission targets. The Parties may transfer or acquire emission reduction units (ERUs) resulting from projects and activities implemented in other Annex I countries. Like most of the flexibility mechanisms there are more unresolved than resolved issues. Further information is available on the web at www.iisd.ca/linkages/climate/ba/mechanisms.

Conclusion

A Senate inquiry into Australia's policy to reduce global warming through late 1999 and early 2000 is very timely. Existing voluntary agreements conclude, or are to be renewed in 2000, environmental management systems (and associated systems for environmental labeling and environmental performance evaluation) are growing in number, forecasts for 2005 are now the focus of international strategy, and emissions trading issues are being addressed. Furthermore, work on a carbon accounting system is underway. A strategic plan for the development of the National Carbon Accounting System (NAC) over the next five years has been released. The system will provide the basis for estimating Australia's greenhouse gas emissions in the period 2008-12. A new CRC for Terrestrial Carbon Accounting, charged with developing methods for measuring carbon fluxes, sources and sinks, has been established at the ANU Research School of Biological Sciences under Professor Ian Noble. Is this an area for environmental accountants to help make a contribution toward holistic understanding?

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CREDITING THE CARBON: SOME NOTES

Roger Martin

The third discussion paper of four in the Kyoto Protocol/Emission Trading series has been issued by the Australian Greenhouse Office - "National Emissions Trading: Crediting the Carbon" on 7th October 1999 (for comment by 30th November). It is available from the greenhouse office website www.greenhouse.gov.au.

The paper focuses almost solely on the provisions of the Kyoto protocol rather than the underlying problem of increasing greenhouse gases or more general problems of

clearing native ecosystems. "Measurement and reporting of sinks activities under the Kyoto Protocol Article 3.3 requires that net changes in greenhouse gas emissions by sources and removals by specified sinks are to be measured as changes in carbon stock. It is likely that the additional activities under Article 3.4 will need to be measured in the same way. This implies that all relevant carbon pools (ie. all pools affected by a given activity) including above and below ground biomass, and soil carbon will need to be measured." [1999, 26]

Some possibilities, opportunities and problems for Australian emission trading are discussed while indicating that nothing will be resolved until the International Panel on Climate Change publishes a special report (due in May 2000). An accounting scheme is likely to include some fairly rough approximations in accounting for carbon stocks, notably for soil carbon. Curiously the greenhouse office is to provide an 'advice' to the Commonwealth Government on a national emissions trading system before this 'early in 2000'. The extent to which a national scheme mirrors the terms of the Kyoto protocol is then perhaps the major consideration.

Three issues are continually emphasised, 1) only certain activities - afforestation, deforestation and reforestation are covered, 2) plant early to get maximum credits in the 2008-12 commitment period, and 3) uncertainty.

1. As only human induced emissions are counted for the Kyoto protocol, credits are restricted to newly established forests/ plantations on land not forested as at 1990. Commercial forests and operations - growth, harvesting, fires - are likely to be excluded (but may not be) assuming that there is some sort of carbon balance maintained.

2. Plant early, plant often. The desirability of early planting is encouraged to ensure that maximum amounts of carbon can be sequestered during the 2008-12 commitment period. Carbon sequestration rates are low during the first years of growth.

3. Uncertainty. "In particular, uncertainty arises in terms of:

- whether the Kyoto Protocol will enter into force;
- if the Kyoto Protocol does enter into force, what will be the final rules and decisions relating to carbon sinks;
- what will be the final rules and decisions relating to international emissions trading in the Kyoto Protocol; and
- what will be the Government decisions in Australia on a national emissions trading system (incorporating a carbon credit trading system) and what will be the design elements of a carbon trading system in Australia." [1999, 45]

A more general area of uncertainty (periodically mentioned) is the limited understanding of carbon cycling. Yet "Because of the strong interest in the potential for earning carbon credits, many companies are becoming active in the area of measuring and verifying carbon sequestration" [1999, 34]. Estimates and rules of thumb are likely to be used for many years as research continues. There is provision for test plots and individual measurement/ estimation of carbon stocks but this would only be viable for very large sinks.

From the Greenhouse Challenge vegetation sinks workbook – "Whatever methods are used, estimates of carbon sequestration will be periodically reconciled with measured values and should therefore be conservative. In general, the less precise the methodologies used to make estimates, the more conservative the estimates should be." [Just like financial accounting!]

Accounting for Carbon Sequestration

Carbon sequestration in plant growth occurs in above ground biomass during growth periods and at a slower rate in soil carbon from decaying plant matter.

Carbon represents around 50% of the dry weight of timber. Marland and Schlamadinger

calculated a base case scenario growth rate of 1.72 tonnes of Carbon per hectare per year "a rate that is appropriate for productive forests in the South-East US or Central Europe and yields 100 T C/ha after 60 years". They note other studies that have shown growth rates around 8 T C/ha/yr for trial plots of fast growing species (in fertile locations with good rainfall). Harvesting gives discard rates of perhaps 30% for commercial plantations and as much as 50% of timber may be converted to timber products. Australia's native forests have much lower proportions of timber production (from RFA documentation, less than 5% in Tasmania's case).

In temperate forests the bulk of carbon stock is in the soil carbon. For example from Canada's Carbon Budget an estimated 14 gigatonnes of carbon are stored in Canada's forest trees, and 71 gigatonnes in forest soils (not including over 100 gigatonnes in peat deposits). Tate *et al*. estimated New Zealand's Soil Carbon at 4260 (±160 Mt, to 1m depth) and indigenous forest vegetation Carbon at ca 1900 Mt.

Nakane modelled carbon sequestration rates for extant forests at 8.5 - 10.4 (average: 9.4) T C/ha in the broadleaved forests from tropics to cool-temperate zone during the last three decades, but smaller amount of soil carbon (3.5 - 8.4 T C/ha) increased in needle forests (ie. as used in most Australian plantations) from sub-tropical to boreal zones during the same period. With increasing atmospheric CO_2 and soil temperature, existing forests will increase soil carbon fixation rates.

The greenhouse office paper (and earlier publications) push the idea that soil carbon will increase for plantations too though Tate *et al.* consider for NZ that net change in soil Carbon is likely to be negative as under-storey disturbance by herbivory can accelerate Carbon losses by soil erosion, and soil Carbon sequestration in regenerating forest occurs extremely slowly. That is, the forestry operations in a portion of NZ's forests are likely to be causing a net decline of soil carbon for all forests. This suggests that clearing native forest or perhaps the purchase of paper (for example) produced from these forests should require the acquisition of associated emission permits. The IPCC Workbook assumes no change in soil carbon occurs in plantations on previously non-forested land.

Soil carbon losses from forest clearing occur mostly in the first few years but can continue for decades as increased erosion increases oxidation of soil carbon and reduced litter reduces soil accretion. Monitoring and modelling such long term processes appears unlikely to be reliably well developed for some decades yet. The IPCC's current practice for forest harvesting treats all accounted 'sequestered carbon' as being released (or sold) the year following harvesting so that any commercial forestry is currently a temporary sequestration.

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ENVIRONMENTAL REPORTING: SOUTH AFRICA UP, THE REST OF THE WORLD DOWN???

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If you wanted to write about corporate environmental reporting in South Africa a few years ago, it was always going to be a short piece. In those days we did our research and we dutifully reported that there was very little to report, but we said that we believed (because we had to believe) that things will improve. Improve meaning that South Africans will awaken to environmental issues and start questioning and demanding.

Well, South Africans did start to question and demand and companies had to do something. Their legitimacy was being questioned and they had to use all means at their disposal to tell people how interested they were in responsible management of the environment and the like.

Below are some results of our tracking of environmental reporting among listed companies in South Africa. The sample includes the annual reports of all listed companies in South Africa for each of the years from 1994 to 1998. Number of listed companies in the survey:

1994	1995	1996	1997	1998
559	596	606	514	526

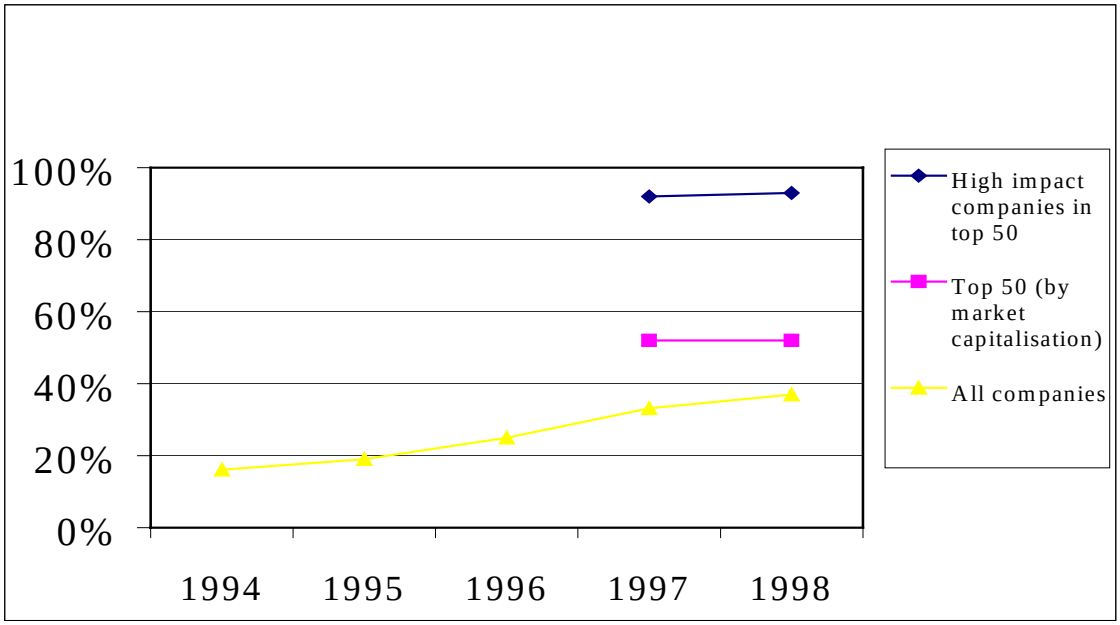
Note: The differences in the number of companies in each year are due to listings, delistings, mergers and year-end changes (sometimes resulting in an entire calendar year with no annual report).

The following results were obtained for the question: "Does the company disclose any information regarding the natural environment in its annual report?"

Following this is a graphic presentation of the results.

Does the company disclose any information regarding the natural environment in its annual report?					
	1994	**1995**	**1996**	**1997**	**1998**
	Yes	Yes	Yes	Yes	Yes
All companies	16%	19%	25%	33%	37%
Top 100 (by market capitalisation)	N/a	N/a	N/a	48%	49%
Top 50 (by market capitalisation)	N/a	N/a	N/a	52%	52%
High impact companies in top 50	N/a	N/a	N/a	92%	93%

Note: N/a indicates that the information is not available.



The percentage of companies that disclose some environmental information in their annual reports show an increase in each of the years. The percentages for all listed companies appear to be fairly low, but it is to be remembered that some of the listed companies in South Africa are small by international standards. The influence of company size on environmental reporting is, by now, well documented. Furthermore, most surveys around the world only include the top 100 companies. The South African top 100 figure for 1998 is 49%. This increases to 52% for the top 50 and 93% for the high impact companies in the top 50. High impact was taken to refer to companies in the mining, steel, chemicals and oil industry sectors.

A Comparison with International Results

KPMG undertook an international survey in 1999 that included the top 100 companies from 11 countries. If the different countries are compared with the South African top 100, only three countries (UK, Sweden and Finland) boast higher disclosure rates than South Africa. At face value, the KPMG figures appear to indicate that a greater proportion of South African top 100 companies disclose environmental information in their annual report than the top companies in Denmark, Netherlands, Norway, France, Germany, USA, Belgium and Australia.

The 1999 survey (KPMG 1999:15) indicates that 47% of the companies in the survey "published environmental information in corporate reports". Yet, in a similar survey by KPMG in 1997 (24), 71% of the companies in the survey (the top 100 companies in each of 13 countries) disclosed environmental information in their annual reports. There are two reasons why the KPMG 1999 figures are low. Firstly, companies that did not reply were assumed not to report environmental information. Secondly, the researchers looked for "real" environmental disclosure, whereas the South African survey looked for any environmental information. If these reasons are taken into account, the 1997 figure is probably more comparable with the South African data presented here and not comparable with the 1999 KPMG figures.

To summarise: we know that South African environmental reporting is on the increase, but we do not know whether the KPMG figures suggest a decrease in many other countries during the latter half of the 1990s. Time (and more research) will tell.

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WASTING NOTHING MAKES GOOD BUSINESS SENSE

Bronwynn Adamson
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The Murrumbidgee has long been a scene of environmental calamity and disgrace; turbid channels twisting through salt-ravaged plains. But instead of the usual demising, the CSIRO are discussing the opportunities in this area, for potential innovation and smart business practices that could turn land restoration and environmental sustainability into a global industry.

CSIRO scientists are apostles of the new creed of corporate environmentalism - the use of cutting edge science and hard nosed business acumen to create viable remedies for environmental sickness. The bottom line motive is still profit as far as these companies are concerned, but they have now realised that there is possibly money to be made and saved by turning 'green,' or, developing an environmental conscience.

The head of CSIRO's Forestry and Forest Products division, Glen Kile, provides one example: 'Asian timber supply is being restricted. We can meet some of that demand, repair our landscape, fight greenhouse and create employment - all by getting the right level of investment and science into a new farm-based plantations industry.' Kile is describing a new $3 billion industry born from an environmental calamity. While arresting land degradation, he says, Australia can establish an expanded plantations industry with the potential by 2020 to convert a $2 billion trade deficit in wood and wood products to a surplus, add $6000 million a year to farm incomes, employ 30 000 people and help Australia meet its greenhouse targets.

John Williams heads a CSIRO national task force that is reinventing the agronomy on which Australia's $7 billion cropping industry is based. He says the knowledge that farmers will gain over the next decade on new crop regimes (including plantation timber) and on better soil management will itself become a high value export. 'Acid soils, salinity and erosion are universal,' he points out.

Graham Harris, the head of Land and Water CSIRO division, and Brian Walker, an ecologist who heads the Wildlife and Ecology CSIRO division, say whining about the obvious problems must be replaced with finding solutions, which is why they have linked their extensive research resources to form 'hit squads' of scientists who can be contracted to industry or government to tackle the many and varied environmental problems.

This current trend is justifiably giving all environmentalists great heart. Increasingly Australian companies are be coming aware of their business's effect on the environment, and are now finding that improving their environmental performance can also improve the company's profits.

One of the most remarkable examples is Portland Aluminum in Victoria. By 1990, after four years of operation, the smelter was dumping 1000 cubic metres of solid waste into an adjacent landfill site every month. Waste disposal was costing the company $1.3 million a year. The plant manager announced that the remaining landfill site would be turned into a natural wetlands and passive recreation area. This bold leap of faith resulted in a 60 percent

reduction in solid waste in just one-year.

The end result has been that from a base of 1,000 tonnes of rubbish per month, the company now has no general waste going to landfill and has dug up and recycled its old rubbish. Instead of a $1.3 million annual cost, the company says its environmental program has now boosted overall revenue by more than $1 million per year.

Similar success has been achieved at the company's Port Henry site at Geelong. The surrounding land, previously sheep country, is no longer needed as a rubbish tip, and has been restored to a nature reserve. This is a long-term ecology program in which several research institutions are restoring the areas resettlement biodiversity, something which, oddly enough, wouldn't have been possible without the presence of the smelter.

Another recycling success is the Wattyl Australia paint factory. The company recouped in one year the $100 000 spent on a distillation unit that recovers solvent used in cleaning tanks and equipment. Now instead of paying someone to dispose of the valuable solvents, the company is recovering up to 90 percent of the solvent and using it again. The company also recovers up to 60 percent of previously wasted paint, and a whole new product, a primer, has been created from the final distillery sludge.

In South Australia, the Smith's Snack Food Company looked at ways to reduce the vast quantity of water being used. In 1997, the company was using 315 million litres a year, mostly for washing potatoes. A $65,000 waste-water treatment plant was installed to allow most of the water to be recycled. It took just five weeks before the company recouped its initial outlay. The company is now saving more than $130,000 on its annual water bill. Planned additions to its treatment system are expected eventually to halve the amount of water once used.

Recycling is also paying dividends for Cadbury Schweppes. Annual savings from reduced raw materials and waste disposal costs at its Melbourne factory have now topped $780,000. It cost $420,000 to change its production systems to maximise recycling, a sum that was recouped in 16 months.

A lot of work is also being done by companies conscious of their international obligations, particularly those companies that generate greenhouse gases.

In 1997 BHP's Appin and Tower coal mines near Wollongong were pumping 250 million cubic metres of methane a year into the atmosphere. The company now captures the waste gas to fuel a power plant generating 94 megawatts of electricity - enough to power 60,000 homes.

Berrybank Farm piggery is also finding that the old farming philosophy of wasting nothing makes good business sense. The waste from one part of the farm has become the input to another. Along the way, the company has eliminated environmental problems such as odours and groundwater contamination, and dramatically cut water consumption. The company has invested $2 million in a waste management system that saves $435,000 a year through generating the farm's own electricity from biogas, conserving and recycling water and collecting waste for sale as fertiliser.

Every day, from what was once waste, the farm now recovers:

- 100,000 litres of recyclable water; seven tonnes of waste solids, which are sold as fertilizers;
- 100,000 litres of mineralised water, used as fertiliser; and
- 1,700 cubic metres of biogas running a co-generation electricity program with a daily output of 2,900 kilowatts of power.

Volvo Australia's first steps into the fast-forwarding future of car recycling are immediately impressive. In Sydney, Volvo's pilot recycling program is the first of its kind in Australia. The project benefits the environment in three ways: (i) by getting unroadworthy cars off the road; (ii) by recycling steel

and other materials; and (iii) by recycling parts, thus saving resources.

The Sydney recycling project borrows from Volvo's ECRIS (Environmental Car Recycling in Scandinavia) program in Sweden, in which Volvo engineers work towards achieving tough new European vehicle recycling laws. From January 2003, car makers and distributors in Europe must recycle, or 'recover' 85 percent of their vehicles by weight. By 2013, that obligation will be 95 percent. The project is currently achieving 75 percent. Australian legislation doesn't yet require car manufacturers to follow European trends. By already establishing a recycling program, Volvo will steal a march on its automotive competitors, whilst the environment benefits. In Sweden, recycled parts are called 'green parts', which is a good way of saying that they are an environmentally sound choice. However, as part of Volvo's core values of safety, quality and environment, no safety-related items are recycled.

It is examples like these businesses in Australia that give scientists and others working on environmental issues some faith that times and attitudes are really changing. The changing attitudes by business are the great hope for community aspirations of environmental and industrial sustainability, because they reveal a growing awareness that economic activity cannot be separated from biological systems. It seems to be clearer to the pessimists about business that the two need each other in order for both to survive.

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TAKE TWO: TEACHING SOCIAL AND ENVIRONMENTAL ACCOUNTING

Geoff Frost of APCEA (Newcastle) and Roger Burritt of APCEA (ANU) comment below on their teaching experiences with environmental accounting in Semester 2, 1999.

1. The University of Newcastle

Philosophy

The approach adopted in teaching any course is primarily determined by the students enrolled. While there has been previous discussion as to the curriculum for such courses (see Mathews, 1999), the reality is tempered by the background and experience of the students. At the University of Newcastle ACFI 318: Social and Environmental Accounting has been offered since 1997, and while it serves primarily as a third year elective for accounting students, a considerable minority of students undertake the course as an elective in Economics, Business and Information Science degrees. Such a diverse student population (with students' past experience running from having studied third year accounting theory to those that have only previously studied one unit on debits and credits), has resulted in an evolution from a theory course to one that focuses more on the practical interaction between business and the environment. The end result? While there is normative discussion of the underlying theories, attention is focused upon management practices and bringing to the class room 'real world' developments.

The Class Room

Teaching such a course allows you to contrast opposing philosophies, much more so than in traditional subjects for we are not bound by specific 'rules', or a need to abide by accreditation requirements.

Currently we are using Gray, Owens and Adams (1996) as the recommended text, which is supplemented by a book of readings

(containing relevant research articles on the set topics). Articles are chosen to complement the text, and for certain topics are the only reading materials prescribed. Such text book discussions are complemented by guest lecturers. Over the past two years this has included the Environmental Manager of the local lead smelter plant to discuss environmental management, a researcher from BHP Research on the application of life cycle analysis, and a local councilor (Greens Party) talking on the role of local government on environmental development. Such guest lectures are invaluable in emphasising the relevance of the issues being studied, and certainly Newcastle has a wealth of experts on environmental issues.

This year we have adopted presentations within the course. Students in small groups are assigned a topic on which to present. With many students studying part-time and working in industry, it allows them the opportunity to analyse the issues within their work environment. The first presentation this year on environmental management was by two students from Energy Australia (an electricity supplier) and BHP. Other assessment tasks are designed to focus student attention upon businesses' response to environmental and social issues. For example, each year there is an in-class case study undertaken where the students have two hours to assess selected materials (collected from many different sources) and respond to set questions on the business response, comment upon the adequacy of such a response and discuss actions that should be undertaken. Last year's case study was on Sydney Water and the *Cryptosporidium* and *Giardia* contamination.

The primary assessment task for the course is a research assignment. Students are required to develop a small research topic on an issue of their choice. Past research topics have ranged from the practical (such as a cost benefit analysis of insulation in University buildings, or hand dryers versus paper or cloth towels, to a business plan for a worm farm) to the very conceptual (such as critique of the deviation of accounting standards from the scriptures). It is a constant source of surprise the depth in which some of the projects have been undertaken. Such an assignment, however, does require a substantial commitment by the lecturer (a research proposal for each assignment is reviewed in week 6, with some students requiring additional guidance) and also the ability to team students with other parties. In this case we received considerable support from the University Environmental Officer who was able to match students with parties such as the University cleaning service and architecture and planning, and provide costing data on projects. An unexpected bonus from such a process is that it has directly resulted in three honours students in environmental accounting in the last two years.

The Program

The following is a brief outline of the program offered at the University of Newcastle.

Topic 1: Introduction: What is social and environmental accounting?

Topic 2: The Accountability framework: Why social and environmental accounting? Management accountability, stakeholder theory, legitimacy, etc.

Topic 3: The greening of business: Environmental policy and management - adoption, establishment and implementation.

Topic 4: Social and environmental audits.

Topic 5: Accounting for the environment and social issues: management accounting.

Topic 6: Recognition and Measurement of Heritage and Infrastructure Assets; The Question of Inter-Generational Equity

Topic 7: Investment, budgeting and appraisal.

Topic 8: Reporting on the environment and social issues.

Topic 9: The 'greening' of investing: banking, financial institutions and the ethical investor.

Topic 10: Contemporary Accounting Issues and Future Directions for Social and Environmental Accounting.

2. The Australian National University.

Philosophy

At the beginning of the semester, at The Australian National University, the composition of the student body and the number of students enrolled in a unit is unknown. Flexible requirements for enrolments mean that students can explore a unit for several weeks and then either not enrol or, if previously enrolled, withdraw if they cannot cope or do not find the unit to be what they had expected it to be. This means that although a plan for each semester is made and a unit outline produced, the final composition of students does not really settle down until Week 4 or 5 of the semester after which it is possible to focus on gaining specific knowledge of particular student interests and expertise. COMM 8017 'Environmental Accounting and Reporting' has been offered as a postgraduate unit in the Faculty of Economics and Commerce since 1994. A second unit, NCDS 8027 'Environmental Accounting and Planning', offered to students as part of an environmental management and development program, has operated as a shadow unit throughout this period. All students attend the same seminars. Finally, COMM 3017 'Environmental Accountability and Reporting' was introduced in 1999. The total number of students has varied and averages about 20 each semester. This number is only just bordering on being viable in economic terms. If total enrolment numbers fall below 15 students in the Department of Commerce a unit is not offered.

Variety is the key component in the make up of the environmental accounting student body. Accounting, economics, law, engineering, natural science, geography, development studies and environmental management all provide students for the environmental accounting melting pot. The breadth in student backgrounds means that while it is not possible to achieve any real depth in theoretical accounting knowledge in the one semester unit (some students have no accounting background at all), all students leave the unit with a better understanding of the variety of perspectives that coexist on environmental issues, and they gain a realistic idea of the relative importance of the contribution that environmental accounting and reporting can make.

The Class Room

Interactive seminars, structured, guided (and sometimes dominated) by the lecturer, Roger Burritt, provide the focus of student attention for between 1 to 2 hours of discussion at the beginning of each week's meeting. A set of readings, issued for each week's topic, is introduced and discussed in an informal environment (see the Topics below). No text is set for the unit, but two books on corporate environmental accounting, accountability and reporting provide recommended background for some of the specific topics:

- Gray, R, Owen, D, Adams, C., *Accounting and Accountability. Changes and challenges in corporate social and environmental reporting*, Prentice Hall Europe, 1996.
- Schaltegger, S., *Corporate Environmental Accounting*, John Wiley & Sons, Chichester, 1996.

Apart from corporate environmental accounting, the unit also provides an introduction to macro-environmental accounting – SEEA, SOER, the London and Nairobi groups, Countryside Commission, etc, and links with micro environmental accounting. These issues are not included in corporate environmental accounting texts. However, Australia is blessed with world-class expertise in this area and guest lecturers from the Australian Bureau of Statistics have been included in the program from time to time. The background texts used for these areas are:

- Beder, S., *The Nature of Sustainable Development*, (2nd edition), Scribe Publications, Australia, 1996
- UN, SEEA, 1993.

Other visitors are also integrated into the program on an 'as needs be' basis. For example Shell Australia and the ACT Department of Urban Services provided speakers on waste

management, as background to an environmental audit exercise groups of students were involved with for part of their overall assessment.

Group presentations form a small part of the weekly seminar program. Group work provides one of the key learning experiences for students, because of the varied backgrounds and experiences within the cohort. Students also have three assignments to complete and a major project. This year the major project focused on the assessment of voluntary environmental agreements made between government and industry. A report and class presentation was made by each student in order that a synthesis of conclusions could be drawn from the fifteen or so agreements examined.

Each year the unit has a slightly different focus, driven to some extent by the lecturer's interests and the student mix. A number of Masters projects on environmental accounting (at macro and micro levels) have been completed and awarded, following student involvement in the unit. Three students of environmental accounting are currently being supervised at the PhD level.

The Program: Semester 2, 1999.

Topic 1: Introduction. Environmental assets. Natural Capital – the Case of Earth Sanctuaries Ltd. Eco-asset sheets.

Topic 2: Environmental Liabilities

Topic 3: Management of Environmental Costs and Opportunities. Corporate Environmental Accounting.

Topic 4: Economic Instruments.

Topic 5: Principles of Sustainability and Accountability. Frameworks of Environmental Accounting.

Topic 6: Environmental Management Systems.

Topic 7: Public Sector Water Management.

Topic 8: Voluntary Codes and Environmental Disclosure.

Topic 9: Life Cycle Analysis. Environmental Audit

Topic 10: Finance and the Environment.

Topic 11: Communication of environmental information. Levels of reporting – SOER/ SEEA/SERIEE.

Topic 12: Corporate Sustainability Reporting. Global Reporting Initiative.

Topic 13: Future directions.

3. Conclusions

The purpose of this brief discussion was to outline the application of existing environmental accounting courses. These courses have developed independently over a number of years, however several similarities have evolved, motivated by the developing subject matter and make-up of student cohorts. These similarities predominantly revolve around the movement away from purely theoretical perspectives to a focus upon 'real world' application of environmental accounting. There is also recognition that accounting is only one component (but an important one) of a business response on environmental issues, and that it is important for students to have a broad interdisciplinary and constructively critical perspective about environmental management in order to awaken the view that environmental protection has a cost, one that accounting can partially and appropriately help identify, but that environmental protection is not solely win-win and neither business nor government should expect it to be. It is hoped that the proceeding discussion heightens awareness of environmental accounting education. If interested in the environmental accounting courses discussed, please do not hesitate to contact the authors.

Reference

Gray, R, Owen, D, Adams, C., *Accounting and Accountability. Changes and challenges in corporate social and environmental reporting*, Prentice Hall Europe, 1996.

Mathews, M. R., "An introduction to Environmental Accounting Education", *APCEA News Journal*, 5(1), 12-16.

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ENVIRONMENT EXTRA!

AMEEF Environmental Excellence Awards

Every year AMEEF presents its national Environmental Excellence Awards to recognise leaders and innovators in environmental management in the minerals and energy industries. This year's award winners include:

Project (Large Company) – MIM Holdings Limited

Project (Small/Medium Company) – Perilya Mines NL

Communication Award – Western Power Corporation

Further information on the awards and the recipients can be found at www.ameef.com.au/.

National Greenhouse Gases Inventory

The Commonwealth Government released in September the 1997 Greenhouse Gases Inventory. Further detail may be found at www.greenhouse.gov.au/inventory/index.html.

State of the Environment Reporting - Canada and Australia, a Timing Comparison

The federal government of Australia has produced a State of the Environment Report in 1985, 1986, 1996 and is expected to produce another in 2001. In Canada, on the other hand, a commitment included in the Throne Speech has just been made in Ottawa in the 36th Session of Parliament on October 12, 1999, to publish an annual State of the Environment Report. This new commitment renews an old commitment made by Canada to provide a "State of the Environment" report annually. Before Environment Canada sustained a 30% budget cut over the past four years because of a Thatcherite-style "Program Review", it had a State of the Environment branch which produced its last full report in 1996. Since then, the regular reports have ceased and the branch has disappeared. However, a new reporting mechanism can be streamlined and aimed both at providing a baseline of the environmental conditions in Canada, from which progress can be measured, and provide a report on pollution emissions to the air, land, and water. It is designed to be a very effective tool for encouraging voluntary environmental measures, as it would highlight the hotspots and the laggards that need to be cleaned up. To view Environment Canada's last State of the Environment Report go to www.ec.gc.ca/report_e.html and scroll to the bottom of the page.

The Australian Greenhouse Office (AGO) releases Discussion Paper 4: Designing the Market

In December the AGO released Discussion Paper 4: Designing the Market which covers issues such as permit design, measurement and monitoring emissions, reporting emissions, compliance to meet Government's commitment to international targets, penalties and registry of permits. The paper seeks to outline the operational aspects of a national emissions trading system. This paper is part of a series (which includes Crediting the Carbon previously discussed by Roger Martin) that is being circulated for discussion so as to ascertain views on the relevant issues. The discussion papers can be found at www.greenhouse.gov.au/.