INDUSTRY RESEARCH FORUM ON EDUCATION FOR SUSTAINABILITY

Monday 20 September 2004
ARIES, MGSM City Campus

Report

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Abbreviations

ARIES	Australian Research Institute in Education *for* Sustainability
DEH	Australian Government Department of the Environment and Heritage
EfS	Education *for* Sustainability
MGSM	Macquarie Graduate School of Management
NEEC	National Environmental Education Council
OH&S	Occupational Health & Safety
SME	Small to Medium Enterprise
TBL	Triple Bottom Line

1.0 EXECUTIVE SUMMARY

The Australian Government Department of the Environment and Heritage (DEH) together with Macquarie University invited key stakeholders from the business and industry sector to attend a Research Forum on Education for Sustainability. The Forum was held on 20 September 2004 in Sydney. This event was an initiative of the National Environmental Education Council (NEEC) and the recently established Australian Research Institute in Education for Sustainability (ARIES).

This report is a synopsis of the findings from this dialogue. It summarises the input of participants, who were asked to address critical questions relating to Education for Sustainability (EfS) in this sector. The discussion that followed allowed us to understand current status and good practice in Education for Sustainability, the barriers to change for sustainability and industry needs in Education for Sustainability. In light of those findings participants were also asked to identify priorities for research projects in Education for Sustainability.

There is broad consensus that industry urgently needs to engage with sustainability and that education is integral to how that will be achieved. From the Forum it emerged that levels of engagement with Education for Sustainability are low in industry and that education programs need to be tailored to address industry and sector-specific needs, in particular those of the Small to Medium Enterprise (SME) sector. Addressing learning for organisational change through Education for Sustainability programs was also emphasised. The broader question of how industry learns was also explored. The role of higher education in advancing sustainability and Business Schools in particular was discussed. Learning from the experience of peers, learning through networks and through the activities of professional associations were also identified as areas with great potential for development. The need to be strategic about choice of research projects and choice of audiences for education was stressed.

The recommendations discussed include researching and developing a toolkit for the costing and integration of environmental and social impacts into business decision making. The research and development of Education for Sustainability units and teaching resources in MBA and other university programs was also supported. Participants restated earlier recommendations made by NEEC in this area.

This report, which captures status, needs and priorities in Industry Education for Sustainability, has been reviewed by the Forum attendees. Participants were given the opportunity to comment upon a draft report outlining the findings of the Forum prior to the submission of the final report to the DEH.

The valuable information shared at the Forum assists with the definition of critical research priorities in this area. It allows us to understand the dynamics of the business and industry sector more broadly, as well as the specific challenges and opportunities for industry in engaging with Education for Sustainability. The Forum itself served as a means of advancing Education for Sustainability in the sector by promoting the dialogue surrounding sustainability, facilitating collaborative learning, participation and the development of cross-sectoral partnerships.

2.0   INTRODUCTION

The Industry Research Forum was commissioned by DEH and facilitated by ARIES. The objective of the Forum was to identify the strategic research priorities in Education for Sustainability for the business and industry sector in collaboration with those who represent their interests and concerns. The output of the Forum is intended to inform the research work commissioned by DEH in learning for sustainability and establish priority projects to be conducted by ARIES in this sector.

Sustainability
The international literature recognizes that sustainability is hard to define as it means different things to different people in different contexts[1]. It therefore promotes sustainability as essentially an ongoing learning process that actively involves multiple stakeholders in change across every sector of society[2]. Recognising the importance of stakeholder engagement in sustainability initiatives, DEH invited key participants to shape the inquiry into how research in education can contribute to change towards sustainability in the industry sector (see participant list, section 4.0).

Ensuring informed and relevant projects
The Forum provides a means of ensuring that future research projects address needs identified by those best positioned to inform the work of DEH and ARIES in the industry sector. This event utilised their expertise and sector-specific knowledge to ensure that ARIES projects are relevant, reflect the requirements of the sector and represent their concerns.

Stakeholder dialogue
Actively involving stakeholders in inquiries relevant to their concerns is closely aligned with the principles of Education for Sustainability. The participation of experts from the sector builds a shared sense of ownership for the output of the Forum and the research it informs. It also engages stakeholders in the dialogue surrounding sustainability, shares and deepens the understanding of the issues and concepts involved. In this way the format of the Forum actively engages stakeholders in the process of change for sustainability in the industry sector.

Outcomes sought
- Engagement of the sector in dialogue surrounding Education for Sustainability;
- Establishment of relevant and informed strategic research priorities;
- Shared ownership in the output of the Forum and its associated projects; and
- The Forum becomes a means of achieving sustainability outcomes – dialogue, collaborative learning, participation and partnership building.

3.0   EVENT FORMAT AND AGENDA

The Forum was facilitated in a way that encouraged open dialogue and the active involvement of all attendees. The facilitation of the Forum also sought to ensure that its output would be useful and pertinent to the requirements of the DEH and ARIES. Stakeholder input was continually collated and fed back to those present to ensure that the recommendations of the Forum were representative and accurate.

The day was largely devoted to two tasks that were completed by attendees in collaborative working groups. The attendees were sent a number of key questions prior to the event so that they could begin thinking through and identifying priorities for the sector (see appendix, section 7.2). The first task involved addressing those questions in groups, reporting back findings to all participants and the collation of those findings by the facilitator. This resulted in a shared understanding of the status and needs of industry in Education for Sustainability.

The second task involved agreeing on suggestions for research projects in Education for Sustainability that would address those needs. In order to trigger thinking some research projects were suggested by ARIES (see appendix). Participants were asked to consider the findings from the previous task in discussing these suggestions. Dialogue led to the identification of specific research projects (see recommendations).

Table 1 Agenda

Time	Item
09.30	*Refreshments & registrations*
10.00	Welcome
10.05	Overview of pertinent projects
11.00	Context setting
11.15	TASK 1: Needs, status and priorities
12.00	Discussion & collation of group input
12.30	*Lunch*
13.30	TASK 2: Specific project recommendations
14.15	Discussion & collation of group input
14.45	Summation
15.00	*Thanks & close*

This report captures status, needs and priorities in Industry Education for Sustainability. Participants were given the opportunity to comment on a draft report of the Forum prior to the submission of the final report to the DEH.

4.0   PARTICIPANTS

Seventeen individuals attended the Forum from business and industry, higher education institutions, federal and state government as well as business and industry associations and environmental groups. The selection of participants was guided by DEH under advice from the NEEC's Industry Working Group.

Table 2 List of Participants

Name	Title	Organisation
Robyn Pearson	Director	Sustainable Learning Australia
Frouke de Reuver	Senior Project Manager, Business Partnerships Section, Sustainability Programs Division	NSW DEC
Anita Mitchell	Director, Environment & Safety	Waste Service NSW
Prof Robin Kramar	Director	MGSM
Dr Suzanne Benn	Corporate Sustainability Project	UTS
Henry Marszalek	Asia-Pacific Environment Manager	Ford Australasia
Prof Peter Newman	Director of Institute for Sustainability and Technology	Murdoch University
Di Dibley	National Policy Adviser Environment	Australia Industry Group
Paul Perkins	Chair	NEEC
Fiona Wain	CEO	Environment Business Australia
Jenny Pickles	Senior Manager, Strategy and Regional Programs	EcoRecycle Victoria
Francis Grey	Head of Research	Sustainable Asset Management
Christine Charles	External Affairs Group Executive	Newmont Mining
Joan Cornish	Senior Project Officer	DEH - Environmental Education Section
A/ Prof Daniella Tilbury	Director	ARIES
Kathy Adams	Corporate Sustainability Consultant	ARUP
Amanda Keogh	Corporate Sustainability Research Leader	ARIES

5.0 KEY OUTCOMES FROM FORUM DIALOGUE

The following sections summarise key findings from the Forum. These findings are based on the dialogue of participants. This information was gathered through the notes of the scribes who were appointed for each group, and the summation of those notes, which were written on white boards and read back to participants for their verification. Notes were also taken from flip charts and project cards used to brainstorm research projects in Education for Sustainability.

5.1 Status of EfS in Industry

An overview of the current levels of knowledge and experience relating to sustainability and Education for Sustainability in the industry sector provided an informed context for the identification of the sector's needs in Education for Sustainability.

Limited and fragmented approaches
- There was broad agreement that this sector's understanding of sustainability is limited and fragmented. While more progressive companies are engaging with the notion of social responsibility, many businesses focus on environmental management approaches and very few are addressing sustainability issues in an integrated way. Industry is still in the early stages of adopting sustainability. Some compared the current levels of acceptance for sustainability to the status of occupational health and safety (OH&S) two decades ago. It was noted that the development of professional disciplines, operational training and the introduction of new regulation played a significant role in embedding OH&S in business practice.

Sustainability reporting
- Where companies have engaged with sustainability much of their knowledge and experience relates to triple bottom line (TBL) reporting and involvement in corporate responsibility indices. There is tendency to employ external sustainability consultants in many organisations, as opposed to building internal capacity to address sustainability issues.

Larger companies more active
- Participants agreed that larger companies are more actively engaging with sustainability than the SME sector.

Champions
- It was noted that there are some 'champions' amongst these larger corporations, which have embraced the concepts of good governance and corporate responsibility. The drivers for change usually relate to a mitigation of risks to which sustainability issues have exposed their companies. These companies have made a significant contribution to building the business case for sustainability in their sectors. Some are even attempting to persuade other companies to follow suit, through initiatives such as sustainable supply chain programs.

Cross-sectoral approaches

- Successful efforts to foster cross-sectoral approaches are few. Initiatives are rarely coordinated between companies. It was suggested that national business and industry professional associations could play a critical role in fostering cross-sectoral approaches between companies, and should be encouraged to do so. Currently, international bodies such as the Global Reporting Initiative, the International Council on Mining and Minerals and the World Business Council on Sustainable Development are proving to be more effective in supporting and documenting good sustainability practice.

Interplay between government and industry

- It was suggested that government could play a role by supporting initiatives. There is co-operation between industry and government through sustainability covenants and the development of extended producer responsibility agreements in certain sectors, however it was felt that more could be done to address sustainability issues through greater interplay between government and industry.

Specialists in silos

- Within companies, most programs are conducted by specialists operating in departmental silos and rarely engage the whole of the organisation in change for sustainability. This trend is reflected in the observation that companies are using the language of sustainability, but it is not translated into the culture of the organisation.

Need for active engagement

- Participants were emphatic that there is an urgent need to engage businesses more deeply in sustainability. Companies themselves should be actively involved in developing approaches to address sustainability as they understand the dynamics of their sector and the needs of their organisations. The process of strategic planning was mentioned as a potential lever for change as it is closely related to envisioning, an important principle of sustainability. Envisioning enables organisations to consider strategic directions for moving towards sustainability. [3]

EfS is rare

- Education for Sustainability is rare in the business and industry sector. Most education programs are limited to addressing environmental problems. The goal of these programs is usually to raise awareness or train staff such that incremental improvements in environmental performance can be made. This approach provides information in the hope that it will lead to change in behaviour. The difference between this type of information provision and building capacity for organisational change was noted. It was agreed that there is an opportunity to leverage awareness building and environmental training programs and align them with Education for Sustainability so staff could be better equipped to address sustainability.

Approaches to learning

- The question of how this sector learns was explored. A trend towards problem-based education was noted. However, it was suggested that the most effective approaches to learning in this sector often incorporate real life case studies. Few corporations will engage with sustainability through theory alone. The importance of incorporating a values-based approach to Education for Sustainability in this sector was also highlighted. This could be aligned with education relating to good corporate governance, which will often deliver sustainability outcomes.

5.2   Good Practice in EfS

Identifying good practice in Education for Sustainability in business and industry provides the opportunity to learn from programs that have been successful and identifies 'champions' of Education for Sustainability in the sector.

'Best' practice
- The question of what constitutes 'best' practice was discussed. As best practice advances so quickly, efforts to define it can quickly become redundant. In addition, sustainability initiatives need to be contextual and reflect the specific dynamics of each organisation. It was suggested instead that the identification of 'good' practice should focus on companies leading the way in innovative approaches to address specific aspects of sustainability. Understanding the mistakes made by others is also useful as important lessons can be distilled from their experience.

Case studies as learning tools
- There was consensus that there are few examples of good practice in Education for Sustainability in industry, and fewer still are well documented. Most case studies in sustainability are developed as promotional rather than learning tools. They describe the approaches taken by companies, as opposed to analysing the more fundamental processes underlying change for sustainability. Case studies could add more value by sharing learnings between companies. If developed in a participatory manner they can also encourage the contributing company to reflect on i their own experience and improve practice accordingly.

   Examples of good practice in Education for Sustainability were noted from the Nestle Group, Carlton United Brewery and Sydney Water. It was also suggested that IAG, Fuji Xerox and BP had demonstrated good sustainability practice, although it was unclear how they were addressing Education for Sustainability. It was noted that progressive companies often engage with sustainability but fail to see the importance of learning in achieving deep and lasting change.

Nestle – staff engagement
- Nestle's activities were of interest as its staff sustainability learning program embraced some of the principles of Education for Sustainability. Nestle sought to educate and engage staff from the shop floor in developing their own action plans to address sustainability issues in the workplace. Their approach advocated empowering and educating workers in a way that built their capacity to address sustainability. It also encouraged employees to develop a sense of ownership and responsibility for the improvement of workplace operations. This is good practice in Education for Sustainability.

Carlton United Brewery – organizational learning
- Carlton United Brewery was considered to be a company demonstrating good practice. They had taken internal staff education a step further by embracing organisational learning for sustainability. A learning centre for sustainability had been established, which adopted a team-based approach to learning, aligned with the participatory principles of Education for Sustainability.

Sydney Water – staff evaluation of education
- Sydney Water was mentioned as another company showing good practice in conducting internal staff Education for Sustainability. Staff have recently evaluated its sustainability education program using a participatory action research approach. This approach is closely aligned with Education for

Sustainability and builds internal capacity for improving sustainability practice. It is a highly innovative method of program evaluation that delivers change for sustainability outcomes.

5.3   Barriers to Change

There is a need to understand the institutional, cultural and practical barriers to engaging with sustainability in industry in order for them to be addressed through research in Education for Sustainability. The discussion relating to barriers emphasised the restrictions of short-term thinking, the poor understanding for sustainability and the dearth of successful cross-sectoral stakeholder engagement.

Short-term view
- Participants agreed that there were underlying cultural and institutional barriers to achieving change for sustainability in business and industry. Participants suggested that Australian culture in general supports a relaxed approach to problems, individualistic values and takes a short-term of the future. The short-term view taken by both government and business was identified as a critical barrier. The tension between businesses' immediate focus on profits and their need to develop a broader outlook was also highlighted.

Change fatigue
- Participants agreed that there was a need to reorient government and business decision-making to a long-term view that would consider the full impact of current unsustainable practice. These considerations should be incorporated in strategic planning. It was felt that this would involve a process of institutional innovation. However, the sense of 'change fatigue' in the industry sector is a significant barrier to achieving such institutional and organisational reform.

Poor understanding of sustainability
- The lack of understanding across the sector relating to sustainability and how change could be achieved in practice was identified as an impediment. Many of the current efforts to engage industry in sustainability tend to be couched in concepts and language unfamiliar to industry. There is a need to address the business drivers for sustainability using their language. The SME sector in particular struggle with change for sustainability and require education and capacity building programs tailored to their needs.

Inadequate resources
- The lack of financial incentives to address sustainability was mentioned. However, this was not as significant as the simple reality is that business executives do not have the time to address sustainability properly, even when they recognise it to be an important issue. This points to the need to address sustainability through strategic planning such that it becomes a priority on the corporate agenda.

Lack of transparency and governance
- Mistrust for business motives in addressing sustainability was also identified as a barrier. Sustainability requires companies to engage with internal and external stakeholders such as NGOs and the broader community. It was felt that the development of those relationships would be problematic while companies failed to be fully transparent with these groups. This highlights the need for good governance. Some felt the existence of powerful lobby groups in big business

attempting to control the sustainability agenda for their own ends was also a significant impediment to change.

Gap in skills
- Some participants pointed to issues in the overall approach taken by some companies addressing sustainability. There is a tendency to focus on single problems and not think systemically and creatively about how they might be resolved. This points to a need for industry capacity building so the sector can begin to think critically about how it is currently addressing sustainability issues and to develop better and perhaps more participatory problem-solving techniques.

5.4   Industry Needs in EfS

Looking forward, a number of requirements were identified, which will need to be addressed if the business and industry sector is to effectively engage with Education for Sustainability.

Understand how industry learns
- The need to understand *how* business and industry learns was highlighted. It was stressed that Education for Sustainability not only occurs through formal education, but also through non-formal and informal learning. Learning through networks, through peers, and learning from the experience of others were both identified as effective approaches for this sector, which should be explored further.

Develop understanding and internal skills
- There was common acknowledgement of the need for Education for Sustainability in business and industry. Most companies are addressing sustainability by out-sourcing initiatives to consultants or through in-house specialist sustainability units. Companies need to build their own internal capacities to engage with sustainability. Skills should be developed not just in specific teams but across the entire organisation such that sustainability becomes embedded in workplace practice.

Address organisational learning for change
- It was agreed that whole-of-organisation approaches to engaging with sustainability were required in order to achieve deep and lasting change. The need for Education for Sustainability to address organisational learning and organisational change for sustainability was therefore highlighted. In particular the need for Education for Sustainability to facilitate adaptive learning for change was seen to be key. An opportunity was identified for the creation of linkages between organisational learning and Education for Sustainability.

  While there is a lot of literature relating to organisational change, it was felt that there was insufficient understanding in the industry sector regarding how organizational change for sustainability could be achieved in practice. It was suggested that Education for Sustainability could address this need and bridge the gap between knowledge and action.

Empower learners
- The potential of Education for Sustainability to translate awareness into action was stressed. The need for industry education programs to empower learners to address sustainability was

highlighted. An approach to education was recommended that would not only build the capacity of the sector to address sustainability itself, but also motivate it to do so.

Develop tailored approaches

- There was discussion of the need for Education for Sustainability to engage specific audiences in way that is tailored to their requirements. Some suggested that education programs should address identified gaps in the skill-sets of different roles in different sectors. Others emphasised that education efforts needed to be strategic and focus on key multipliers who have influence across organisations. There was agreement that education had to be tailored to address the needs of each sector, especially the SME sector, which had largely been neglected to date. Education for Sustainability should consider the dynamics and context of each sector and adapt its approach accordingly. This would be important if education programs are to effectively address industry drivers for change in different sectors.

Develop systemic approaches:

- Education needs to address not only business drivers but also the deeper reasons for the lack of uptake of corporate sustainability and sustainability reporting. A holistic and systemic approach to education that ties together the range of underlying factors perpetuating unsustainable practice and considers the inter-related nature of these issues is required.

Address relevant issues

- It was clear that industry education needs to broaden its current focus on environmental and social issues to encompass the broader notion of sustainability. Some participants made reference to increasingly important cross-sectoral 'themes' in sustainability such as corporate governance, risk management and the proper costing of sustainability impacts. It was suggested that education programs should explore these broader concepts and provide products and training in these areas.

Leverage industry knowledge

- It was acknowledged that education needs to leverage the knowledge base that already exists in industry. Learning from the experience of others is an important mechanism by which innovations in the industry sector become common practice. The need for industry to be honest about mistakes made in sustainability initiatives was emphasised in this regard. Past mistakes provide a learning opportunity to reflect and improve upon practice, but only if companies are both candid and critical about their activities. It was also suggested that Education for Sustainability could learn from industry and that good practice in education involved a two-way learning process. Industry experience provides a rich resource for teaching materials, which could be used by a number of stakeholders in educational roles including HR departments, government agencies and business schools.

Take a partnership-based approach

- Partnerships were perceived to be an important consideration in addressing sustainability. There is a need to investigate the interplay between government and industry, explore their respective roles and encourage collaboration. In particular it was emphasised that government could do more to help create a 'climate of change' that would support industry.

Address Education for Sustainability in higher education

- The opportunity for partnerships to be developed between universities and business was also identified. This would help higher education institutions better address industry needs in Education for Sustainability. There was agreement that addressing sustainability through the curriculum of Business Schools represents a major opportunity.

Develop learning networks:

- Some warned that there was a risk too much focus would be placed on formal and higher education and that informal and non-formal learning should not be neglected. The role of professional associations in addressing capacity building for sustainability was put forward as a significant area with great potential for further development.

5.5   Research Recommendations

In light of the discussion surrounding status, barriers and needs of the industry sector the following topics were ranked highly as potential research projects in Education for Sustainability. With the exception of 5.5.1, these projects are based on the recommendations distributed to the Forum participants (see appendix for full list of suggested projects discussed by participants).

5.5.1 Integrating environmental and social costs into business decision-making

Need

- The need to develop tools for the proper costing of environmental and social impacts was a theme running throughout the day's discussions.

Recommendation

- It was recommended that accounting tools should be developed that would properly quantify these impacts. This would also help with the identification of risks and opportunities to business from sustainability issues. It would also enable businesses to quantify the cost of reparation, both immediate and long-term, if risks were not properly managed. This project would address the growing pressure on the corporate sector to 'internalise externalities' and properly cost the full impact of operations on the environment and society.

  A multi-disciplinary approach to the development of such a resource involving business and industry associations was suggested. It was thought that the output of such a project would be a toolkit package, possibly containing case study material of 'early adopter' companies involved in trialing the toolkit. It was envisaged that such a resource would facilitate the penetration of sustainability considerations to board level decision-making as well as mainstreaming sustainability into accounting practice.

5.5.2 MBA projects

Need

- Few Australian Business Schools address sustainability or Education for Sustainability in their core course units. There is a need for Business Schools to be encouraged and supported to engage in sustainability and Education for Sustainability. There was consensus that the recommendations made here could potentially be rolled out to other higher education institutions.

Recommendation
- Funding could be provided to Business Schools so they can action research how to address sustainability and Education for Sustainability in ways that best meet the needs of the school and its students. The project would actively involve business school staff, aim for change outcomes and address student demand issues. It would be supported by an Education for Sustainability specialist who would assist business school staff undertaking the project by providing resources and support for best practice.

Recommendation
- Provide funds for the development and trialing of resources / publications with teams of lecturers from across Business Schools. It is important that these materials are championed by lecturers and not enforced from the top-down. The development of such resources could assist with:
    - Greater inclusion of sustainability themes; and
    - Reorientation of core courses towards sustainability.
Key courses offered in most MBAs such as management theory, change management, human resource management, accounting and economics would be targeted.

Recommendation
- Provide incentives for Business Schools to develop new optional units or adapt existing work experience units, which enable students to gain practical experience in the area of sustainability. A project manager position could also be funded. This person would act in an industry liaison capacity, identifying and setting up opportunities for work experience.

It was pointed out that this project would need to consider the structure of different MBA courses and the fact that many MBA students are employed. A 'consultancy' approach to work experience was suggested whereby a group of students could enter a company to carry out a specific project on sustainability.

It was also suggested that this project had the potential to engage international students in sustainability. Teaching experience with this group, especially those from developing nations and Asia, has consistently shown their lack of engagement with sustainability. Work experience in Australian companies exhibiting good sustainability practice could address this dilemma and provide an opportunity for the development of multicultural understanding, an increasingly important consideration in Education for Sustainability.

5.5.3 Informal learning

Need
- Many informal learning for sustainability networks already exist in the business and industry sector. These include conferences, briefings and other networking events that encourage dialogue and share insights between groups. However, not all of them are effective in maximising the opportunity they provide for informal learning.

Recommendation
- Support could be provided to facilitators of these informal networks, both internal and external. A professional development program could build their capacity to address Education for Sustainability through their initiatives. Work could also be done to identify and categorise existing opportunities for informal learning for sustainability across Australia and make this information available to companies and their employees through an online resource. This resource could also encourage

companies to set up their internal sustainability networks and working groups and to participate in external networks. It is important that such a resource be kept up-to-date and presented in an easy-to-use format.

Regional informal learning networks were also suggested. These could engage SMEs in sustainability, many of which operate in regional locations. The approach adopted in the Hunter Valley was seen to provide a successful model in this regard. It was also suggested that the development of a professional sustainability association could play a role in building the capacity of other networks to address sustainability.

5.5.4 Case studies

Need
- Business and industry often find reference stories compelling encouragement to address sustainability, as they document peer companies' experiences, the lessons learned and the benefits gained. However, existing case studies do not provide the relevant or appropriate detail to serve as learning tools. Few document the '*how*' as well as the '*what*' – many serve as mostly promotional material.

Recommendation
- Case studies of good practice for strategic change toward sustainability could be researched and developed for the business and industry sector. These reference tools could help to provide a benchmark for organisations. They can illustrate in a practical way what is involved for companies to engage with sustainability in a systemic manner. These case studies could also be used for education and training in VET and MBA programs.

Such a project would need to review how businesses use case studies as a learning tool. A framework for the development of this reference material could be developed to ensure studies were of a similar standard. It was suggested that the model of 'simple single point lessons' could be effective for this audience. Suggestions for format should 'think outside the A4 box' and meet the needs of the audience. 'Live' case studies in the form of a road-show were mentioned as a possibility.

Many agreed that the development of these case studies needed to deliver learning outcomes for sustainability. It was suggested that developing them in a highly participatory manner could help to bring about change. Engaging companies in their development would encourage them to reflect on their own practice, consider the lessons learned and what they could do differently. This would enhance their internal capacity to improve practice towards sustainability.

5.6 Gaps Identified in Research Recommendations

The objective of the Forum was to establish critical research priorities. Not all of the needs identified in the course of dialogue were addressed by a corresponding recommendation. The following gaps have been identified:

- The role of government in engaging and educating industry for sustainability requires further exploration;
- The need to research how industry learns should be addressed;
- There was some concern that few of the recommended research projects directly addressed the question of learning for organisational change, which was agreed to be at the core of achieving sustainability in this sector; and
- No specific recommendation was made addressing the SME sector.

5.7   Trends Emerging in Industry

A number of critical and over-riding insights into how Education for Sustainability is currently approached in industry and how it should be approached emerged from the Forum. These include:

- Education programs should be tailored to address the requirements of specific sectors;
- The need to address the SME sector in particular was stressed;
- Addressing learning for organisational change is critical for Education for Sustainability programs in this sector;
- Business and industry learn very effectively from the experience of their peers – the innovation of early adopters in sustainability should be translated into educational resources;
- There is lack of clarity on the role of government in facilitating change for sustainability in this sector;
- The need to be strategic about choice of research projects and choice of audiences for education was emphasised often;
- There was a lot of focus on higher education that required balancing with other approaches to learning in this sector (eg informal learning opportunities that do not require certification or accreditation);
- The role of business and industry professional associations and informal learning networks was emphasised by many; and
- There was acceptance for the notions of empowerment, engagement, participation and industry capacity building through Education for Sustainability.

5.8   Summary of Outcomes

The Industry Research Forum not only helped to identify critical research priorities in Education for Sustainability but also produced a range of other positive outcomes, all contributing to the advancement of Education for Sustainability in business and industry through research.

- The facilitation of informed dialogue amongst participants advancing and maturing the Education for Sustainability debate in the industry sector;
- Understanding of the status, barriers and needs relating to Education for Sustainability in industry was shared across business stakeholders as well as those in higher education, and federal and state government, industry associations and environmental groups;
- The establishment of a cross-sectoral network and potential partnerships to pursue Education for Sustainability in industry;

- Identification of the challenges associated with working in the industry environment by key stakeholders;
- Identification of trends, needs and barriers to Education for Sustainability in the business and industry sector;
- Concrete recommendations for informed and relevant research projects; and
- A sense of shared ownership for those research projects and support from different groups for their successful delivery.

6.0   NEXT STAGE

This report, which has been validated by Forum participants, will be forwarded to the NEEC. They will collate its findings with the recommendations from other studies in this area to assist them in making decisions regarding future projects. The Industry Research Forum will ultimately assist the DEH in ensuring a valid program of research in Education for Sustainability is developed for the industry sector.

7.0   APPENDIX

7.1   *Background Information*

7.2   *Questions posed to Forum Participants*

7.3   *Research Projects Suggested for Discussion*

7.4   *EfS in Business and Industry – A Digest*

7.5   *Biographies*

7.6   *References*

7.1 Background Information

This information was provided to participants prior to their arrival at the Forum.

DEH – Environmental Education Section

The work of the Environmental Education Section, within the Knowledge Management and Education Branch of the Australian Government Department of the Environment and Heritage is based on the premise that education of relevant stakeholders should be a fundamental and integral component of all policies and programs aimed at achieving better environmental outcomes. While education is not the only solution, it complements other measures including incentives, regulation, better understanding of systems and processes, and the development of new technology.

After a review of environmental education and wide stakeholder consultation, the Australian Government released the first National Action Plan for Environmental Education in July 2000. Key initiatives of the Plan which form the basis of the work of the Environmental Education Section, include:

·   Establishment of the National Environmental Education Council (NEEC), an expert advisory body
         comprising people from a variety of sectors;
·   Establishment of the National Environmental Education Network (NEEN) comprising
         representatives from Commonwealth, State and Territory environment and education agencies to
         promote better coordination of activities;
·   Implementation of a research program to improve the quality of environmental education and
         achieve better outcomes;
·   Better resourcing of environmental education by including provision for funding of such activities in
         all departmental funding programs; and
·   Establishment of an environmental education working group, the Environmental Education Forum,
         to coordinate education activities across the portfolio and to develop an internal environmental
         education policy.

All of the key initiatives of the National Action Plan have been implemented and the Section continues to work on their implementation and maintenance. In addition to these largely structural initiatives, the Environmental Education Section has made significant progress in advancing environmental education in practical ways, using the Plan as an overarching framework. The roles of the Branch and the National Environmental Education Council cover all sectors and both formal and non-formal education. The emphasis has been on achieving systemic change and a move away from awareness-raising to processes that promote long lasting attitudinal and behavioural change.

National Environmental Education Council (NEEC)

NEEC is a central element of the Australian Government's National Action Plan for Environmental Education and provides advice to the Minister for the Environment and Heritage on the direction of environmental education issues nationally.

Australian Research Institute in Education for Sustainability (ARIES)

In 2003 Macquarie University, through ARIES, was contracted by the Australian Government to undertake research into education *for* sustainability across all sectors, including VET. ARIES adopts an innovative

approach to research projects with a view to translating awareness of sustainability issues into action. ARIES is led by Associate Professor Daniella Tilbury.

7.2 Questions posed to Forum Participants

These questions were emailed to participants in the week preceding the Forum so they could begin thinking through and identifying priorities for the sector.

1. What **knowledge and experience** does the business and industry sector have in sustainability?

2. What is understood by **Education *for* Sustainability** in industry and how is it addressed?

3. What should be the **key strategic goals of any inquiry** into Education *for* Sustainability in this sector?

4. What are the **key priority areas** regarding Education for Sustainability in this sector? Which questions need to be answered?

5. Where are the **examples of best practice** in Education for Sustainability in this sector?

6. What are the **barriers to change** in industry practice towards sustainability and how can research overcome these?

7.3   Research Projects Suggested for Discussion

7.3.1   Enhancing government programs

Need

Many government staff working in the area of industry education do not have a background in Education *for* Sustainability. There is potential to build upon/strengthen the contribution of existing industry education programs run by the government, through developing the capacity of government staff.

Recommendation

A 6 month mentoring program could be established for staff responsible for funding, designing and/or delivering business education and training initiatives. This program would consist of a series of one day workshops, which would bring government staff and industry stakeholders together, as well as delivering tailored workplace visits by mentors that focus on the individual needs of government staff.

Mentoring is a workplace change program. It involves high levels of participation and support. The program is managed by sustainability educators, who act as facilitators, as opposed to experts. Mentors actively engage professionals in critically examining opportunities for change within their own workplace. They can assist government staff in applying education for sustainability in industry education programs and provide support materials.

7.3.2   Evaluating staff training

Need

Assessment of the efficacy and impact of companies' own staff training programs in sustainability is rare. Evaluating staff education and training experiences gauges current programs and creates opportunities to improve their contribution to sustainability.

Recommendation

Research into what incentives and support could be provided for corporate organisations to address this. The research would also identify specific needs of corporations in this area and how best these needs could be addressed.

7.3.3   Building capacity with case studies

Need

Business and industry often find reference stories compelling encouragement to address sustainability, as they document peer companies' experiences, the lessons learned and the benefits gained. Existing case studies do not provide the relevant or appropriate detail to serve as learning tools. Few document the *'how'* as well as the '*what*' – many serve as mostly promotional material.

Recommendation

Case studies of best practice for strategic change towards sustainability could be developed for the business and industry sector. These reference tools could help to provide a benchmark for organisations. They can illustrate in a practical way what is involved for companies to engage in addressing sustainability

in a systemic manner. These case studies could also be used for education and training in VET and MBA programs.

7.3.4 Corporate sustainability toolkit

Need

Triple bottom line (TBL) reporting is increasingly common practice amongst large organisations. However, there is a confusing array of resources available to assist them in improving their sustainability practice–some are more effective or relevant than others. Few are targeted to specific industry needs.

Recommendation

Propose an action research study involving 6-7 progressive organisations in improving systems and practice for TBL. The study would assist them in a) identifying and b) supporting their needs in this area. It would help them navigate their way through the existing array of reporting tools and materials. This work could then contribute to the development of sector specific toolkits for broader use.

7.3.5 Informal learning for sustainability

Need

Many informal learning for sustainability networks already exist in the business and industry sector. These include conferences, briefings and other networking events that encourage dialogue and share insights between groups. However, not all of them are effective in maximising the opportunity they provide for informal learning.

Recommendation

Support could be provided to facilitators of these informal networks. A professional development program could build their capacity to address Education for Sustainability through their initiatives. Work could also be done to identify and categorise existing opportunities for informal learning for sustainability across Australia and make this information available to companies and their employees through an online resource. This resource could also encourage companies to set up their internal sustainability networks and working groups and to participate in external networks.

7.3.6 MBA projects

Need

Few Australian Business Schools address sustainability or education for sustainability in their core course units. There is a need for Business Schools to be encouraged and supported to engage sustainability and Education *for* Sustainability.

Recommendations

1. Funding could be provided to Business Schools so they can action research how to address sustainability and Education *for* Sustainability in ways that best meet the needs of the School and its students. The project would actively involve business school staff and aim for change outcomes and addressing student demand issues. It would be supported by an Education for Sustainability specialist who would assist Business School staff undertaking the project by providing resources and support for best practice.

And/or

2. Provide funds for the development and trialing of resources/publications, with teams of lecturers from across the Business Schools to assist with:

- greater inclusion of sustainability themes; and
- reorientation of core courses towards sustainability.

Key courses offered in most MBAs such as management theory, management of change, human resource management, accounting and economics would be targeted.

And/or

3. Provide incentives for Business Schools so that they develop new optional units or adapt existing work experience units which enable students to gain practical experience in the area of sustainability. A project manager position would also be funded. This person would act in an industry liaison capacity, identifying and setting up opportunities for work experience.

7.4   EfS in Business and Industry - A Digest

In Australia, a range of education and learning for sustainability initiatives are targeted at and / or conducted by business and industry. This digest offers a brief overview of the trends emerging from a review of initiatives in this sector and their contribution to sustainability. It provides a snapshot of the current context in order to inform discussion during the Industry Research Forum on Education for Sustainability, which took place in ARIES on 20 September.

The Context

In Australia, industry is under ever increasing pressure to engage with and respond to sustainability issues[4]. However studies[5] show that many companies, large and small, are struggling with this new broader business agenda. This may be due to a lack of belief in the business case for sustainability and/or a lack of the knowledge, skills and values required to effect the necessary change.

Numerous state and federal government departments, non-governmental organisations (NGOs), industry associations and private consultancies are seeking to address this by providing Environmental Education (EE) training courses, toolkits and other resources. Companies themselves are also investing in and developing EE resources for their employees and, increasingly, their external stakeholders.

A number of companies in Australia now quantify the training they provide in their annual or sustainability reports in line with the Global Reporting Initiative's (GRI) core indicator LA9 '*Average hours of training per year per employee*'[6]. Others detail the number of employees that have attended certain training courses, especially those focusing on environmental management and occupational health and safety. However, few go further than this to consider the impact of such training and the contribution it makes to industry sustainability. This lack of analysis is also reflected in the lack of case studies about industry education for sustainability[7]. Indeed there has been little discussion about this topic compared to the formal education sector, which continues to be the dominant focus of much EE thought and practice.

Policy Frameworks

The Australian Government's National Action Plan '*EE for a Sustainable Future*'[8] is the first national Australian EE policy document. Importantly, the need for industry education for sustainability is acknowledged in the Plan. However as a starting point for national action, the Plan necessarily focuses on tertiary and vocational education and training (VET) in relation to meeting industry needs. State strategies, such as '*Hope for the Future*' the Western Australia Sustainability Strategy[9] and '*Learning for Sustainability*' the NSW Government's EE Action Plan for 2002-2005[10] also focus mainly on the role of formal education and training in promoting sustainability within business and industry.

A number of professional bodies, such as the Business Council of Australia[11], have released sustainability strategies, but to date few specifically consider education *for* sustainability, although the Australian Council of Trade Unions (ACTU) is a notable exception.

Over the past two years education and learning *for* sustainability has been gaining ground as an agenda within business and industry, as many recognise that industry engagement is critical if Australia is to progress towards a sustainable future. Recent examples include the NSW Council on Environmental Education's 2004 '*Effective Sustainability Education Conference*', which showcased a number of presentations addressing industry needs regarding learning *for* sustainability, and the Environmental

Education Summit at Macquarie University *'Building Capacity for a Sustainable Future,'* which was attended by industry leaders and university decision-makers[12].

This growing interest in EE and sustainability may be in response to international initiatives from organisations such as the World Business Council for Sustainable Development (WBCSD) and events such as the World Summit on Sustainable Development (WSSD) which give prominence to business issues in addressing sustainability over national or state policy. In the UK in particular, industry needs are a key focus of sustainability education strategies. For example, '*Learning to Last'* the Government's Sustainable Development Education Strategy for England, has a dedicated section on 'Workforce Development'[13].

Stages to Sustainability

Many companies struggle to distinguish between environmental performance and the broader notion of sustainability[14]. Those that have made this distinction recognise that sustainability involves profound changes in core thinking, policies and practices[15]. Many advocates for sustainability therefore question whether incremental change strategies go far enough, regarding them as more focused on maintaining the status quo[16] or unable to progress a company beyond the initial corporate sustainability stages of environmental compliance and performance.

The compliance and performance promoted by much of the industry EE in Australia still has a role to play in setting up the foundations of transformational change. But for transformational change to occur, companies must define where they want to be and explore alternatives for getting there[17].

The majority of the EE opportunities available to Australian business and industry differ from this approach, providing a one-way dissemination of information from 'experts' to companies instructing them exactly where they should go and how they should get there[18].

The concept of Sustainability Focused Organisational Learning (SFOL) has emerged in recent research[19] as a term to describe the experiences of companies that are attempting to pursue sustainability while making substantial changes to their organisational cultures. There is a growing body of evidence to suggest that those organisations that adopt sustainability are accelerating this change by using organisational learning. In the end sustainability cannot be achieved without innovation, and innovation is best achieved in a culture that embraces learning[20].

The challenge for education if it is to fully contribute to business and industry sustainability is to foster this organisational learning as well as providing opportunities for executives and the wider workforce to develop the necessary knowledge and skills.

Status and Needs of Education for Sustainability in Business and Industry

There is still an inadequate body of knowledge about what effective education and learning *for* sustainability looks like within the business and industry sector[21]. A number of key themes have emerged from a review of Australian EE experiences in business and industry education and their contribution to sustainability[22]. These themes identify key trends and needs in education for sustainability. They reflect different outcomes industry is seeking from education and learning *for* sustainability along with different methods by which it can access this learning.

Informal Learning through Peer Networks

Informal interaction with peers is seen as the predominant way that many employees learn. These interactions range from chance meetings by the water-cooler to conferences and networking events. However many corporate organisations are yet to fully recognise the impact and potential of informal

learning to bring about change. There is a need to recognise and support its key role in progressing business and industry sustainability.

Education for Product Stewardship
Best practice approaches to learning in this area are making the connection between life cycle analysis (LCA) and organisational change for corporate sustainability and the participatory learning process required to support it. This practice is not widespread - current programs still mostly focus on technical approaches to product stewardship. Valuable overseas experiences show how these approaches can be aligned with sustainability through multi-stakeholder dialogue and collaborative interaction on issues.

Educating Stakeholders for Sustainability
The more progressive corporations are showing leadership by educating their own stakeholders *about* and *for* sustainability. These companies are starting to integrate education and training programs into their corporate social responsibility (CSR) policies and sustainability reporting initiatives. However this practice is not widespread nor is it explicitly supported by government agencies and industry bodies.

Resources & Tools for Change
Many products exist to encourage corporate organisations to engage with sustainability. These resources provide valuable information and guidance to companies addressing the challenge of sustainability. There is, however, a need for sustainability tools to go beyond the dissemination of information to the development of skills for action and strategic change. They also need to be more specifically targeted to avoid overloading companies with sustainability resources that do not address their needs.

Beyond Compliance Education
Education that aims to establish compliance with environmental regulations is a significant trend in the business and industry sector. It is mostly delivered by government and provides concise information on high priority issues as well as clear identification of legal responsibilities. It is more aligned with occupational health and safety than with learning *for* sustainability and currently rarely goes beyond building awareness of environmental regulation. These programs could be improved and offer the opportunity to address learning *for* sustainability.

Education relating to Environmental Performance
Many education initiatives are focused on cleaner production, eco-efficiency, environmental auditing and environmental management systems. These programs often offer technical training about environmental management and do much to help identify issues and assist with reducing environmental impact. Some critics believe that they offer a limited approach to change towards sustainability as they not do not redefine strategic directions or assist in defining alternatives to current organisational (rather than departmental) policy and practice. They often see change as solely an internal process and exclude stakeholders from actions to improve performance. There is potential to extend this work to address learning *for* sustainability needs.

Formal Education and Training for Industry – Contributions from the VET Sector
There is a need to extend the EE opportunities in VET from the current technical, skill-based training available to only a small proportion of trainees to more systemic learning that builds the capacity of all students to advance industry sustainability. The mainstreaming of learning *for* sustainability opportunities recognises that all industry sectors and all job functions can and should contribute to sustainability.

Formal Education for Business – Contributions from the University Sector
Business Schools can assist with the shift towards sustainability by providing education, capacity building and leadership across a range of sectors. To achieve this, there is a need to incorporate aspects of sustainability into core MBA courses and to develop a specific program for leaders wishing to specialise or

'champion' sustainability. There is also a need to assert the benefits to students in order to create demand for education *about* and *for* sustainability units.

This digest provides an executive summary of some of the key issues which have been identified in education and learning *for* sustainability in the Australian business and industry sector. It is hoped this will frame a constructive discussion at the Industry Research Forum on Education for Sustainability.

7.5 Biographies

Katherine Adams
Corporate Sustainability Consultant
ARUP Sustainability

Katharine Adams combines postgraduate qualifications and practical experience in sustainable development with project management and communications skills developed whilst working for companies in the UK, Russia and Australia. Her particular areas of expertise are corporate social responsibility, triple bottom line reporting and education for sustainability.

Kathy's relevant projects include:

- Developed a strategy for the *Global Reporting Initiative* on the content and delivery of its next generation 'G3' sustainability reporting guidelines. Based on an assessment of market conditions and stakeholder needs, the recommendations included digital dissemination solutions, educational initiatives and guidance on the future structure of the indicators.

- Identified and reviewed 38 Australian toolkits and other resources that promote corporate sustainability in an Australian Research Institute in Education for Sustainability project for the *Australian Government Department of the Environment and Heritage*. The resources were examined in terms of target audience, content, educational approach and delivery mechanism, with international resources exemplifying best practice in these areas also being considered

Dr Suzanne Benn
Senior Lecturer and Senior Research Associate
Corporate Sustainability Project at UTS

Dr Suzanne Benn is Senior Lecturer and Senior Research Associate to the Corporate Sustainability Project at UTS. (http://www.csp.uts.edu.au/) The Corporate Sustainability Project aims to generate a cross-disciplinary understanding of how corporations can develop the skills, approaches and tools needed to better integrate environmental and social performance with key business objectives, and how to design and lead the change programs needed to make these shifts.

Suzanne's research concentrates on change capabilities, strategies and relationship building required if organisations are to become more sustainable. Her recent research interests include the governance of networks and alliances for sustainability and the environmental implications and limits of stakeholder theory. With Distinguished Professor Dexter Dunphy, her research in this area is currently supported by an Australian Research Council Discovery grant: 'Collaborating for Environmental Sustainability: Managing Tensions among Multiple Stakeholders'. Suzanne is a member of the core research group for the Centre for Corporate Governance at UTS, under Professor Thomas Clarke, and of the Management Team for the Innovative Collaboration Alliance and Network (ICAN) Research Centre, under Professor Stewart Clegg.

Christine Charles
Group Executive – External Affairs
Newmont Mining

Christine is the Group Executive - External Affairs with Newmont Australia. Newmont is the world's largest gold mining company, with headquarters in Denver USA, and operations across 5 continents. Christine's role covers operations across Australia and New Zealand, and she is part of the global management team.

Christine has strong personal and professional interest in public policy and the public/private/community interface. She is currently on the Board of SA Business Vision 2010, a Business Ambassador for South Australia, co-chair of Reconciliation SA, Board Member of Beacon, National Vice President of the Institute of Public Administration and a Trustee of the World Wildlife Fund for Nature (WWF). Christine is a member of the Minerals Council of Australia Sustainable Development Committee, chairs the Women and Mining Group, chairs the SD Skills Development Group and chairs the organising committee of the 2004 Global Conference on Sustainable Development. She is also a Board member of Operation Flinders and on the Marketing & Development Committee for the Dunstan Foundation.

Di Dibley
Australian Industry Group

Di's previous experience includes an Academic posting University of Canberra –lecturing in Environmental Law (1984-1990); Legal Counsel, Ai Group 1991-1996; National Liaison Officer, Australian Conservation Foundation 1996-1997; Director, ACF Sustainable Industries Office 1998-2000; Consultant/Director Tirra Lirra Pty Ltd 2000-2003.

Di is a National Policy Advisor, Environment and Energy, for the Ai Group and is a Member of the Advisory Board, Australian Centre for Environmental Law, Australian National University and a Member of the NSW Ministerial Council on Environmental Education.

Francis Grey
Head of Research
Sustainable Asset Management

Amanda Keogh
Corporate Sustainability Research Leader
ARIES

Amanda Keogh combines postgraduate qualifications in sustainability and research in Education *for* Sustainability with practical experience in marketing, communications and project management in the international IT sector. She is particularly interested in how corporate organisations learn for change towards sustainability.

Amanda is the corporate sustainability research leader with ARIES. In this role she has been involved in a national review of industry status and needs in Education *for* Sustainability and contributes to research projects in other sectors, including higher education and international strategies in education for sustainability.

Prof Robyn Kramer
Professor in Management
Graduate School of Management at Macquarie University

Robin Kramar is a Professor in Management in the Graduate School of Management at Macquarie University. She has published widely in a number of areas, including strategic human resource management, equal employment opportunity and diversity management. Robin is part of an international research group that conducts a survey of human resource policies. The Cranfield survey now involves 35 countries and has been running for more than ten years.

Professor Kramar is Editor of the journal Asia Pacific Journal of Human Resources. She is particularly interested in the way human resource management is evolving, particularly with regard to corporate social responsibility. Robin has published five books and numerous articles in international and national journals.

Henry Marszalek
Manager of the Environmental Quality Office Asia Pacific
Ford Motor Company

Henry has held diverse positions in manufacturing at Ford Operations in Australia spanning 30 years. Included has been an overseas training assignment of 6 months duration in the United States and assignments at various locations within Australia.

He is currently Manager of the Environmental Quality Office Asia Pacific, Ford Motor Company and has been in this position since March 1998. The role oversees the environmental performance of some 20 Ford, joint venture and affiliates, manufacturing, warehousing and service operations located in 11 countries in the Asia Pacific region.

Anita Mitchell
Director Environment & Safety
Waste Service NSW

Anita Mitchell is the Director Environment & Safety at Waste Service NSW where she has responsibility for environmental and safety compliance and the management of host community relations across Waste Service NSW's operations. In this role, Anita has also led the organisation's embracement of triple bottom line reporting.

Anita's experience covers environmental impact assessments, environmental strategies, risk management, due diligence and environmental governance, environmental management systems, auditing, corporate social responsibility, community engagement and sustainability reporting.

Anita holds a degree in Environmental Science and a Master of Environmental Management and she is also the President of the Environment Institute of Australia & New Zealand's NSW Division.

Professor Peter Newman
Professor of City Policy & Director of the Institute for Sustainability and Technology Policy
Murdoch University

Professor Peter Newman is the Professor of City Policy and Director of the Institute for Sustainability and Technology Policy, at Murdoch University. The ISTP has 70 PhD students working on various aspects of sustainability as well as running an undergraduate degree in Sustainable Development and an MA in ESD. He has recently completed a secondment to the Western Australian government where he was the Director of the Sustainability Policy Unit in the Department of Premier and Cabinet, co-coordinating the development of a Sustainability Strategy for the state. This Strategy has been received with considerable interest around the world. The World Business Council for Sustainable Development said that there was no other Strategy in the world as comprehensive and engaging of the community. He is now Chair of the Sustainability Roundtable that advises the Premier on how to implement the Strategy. In 2003 Professor Newman was awarded a Centenary Medal for Planning and Sustainability and in 2004 was made a Sustainability Commissioner in NSW.

Robyn Pearson
Director, Waste Audit and Consultancy Services
Sustainable Learning Australasia

Robyn has 15 years experience working within manufacturing and service companies both in Australia and the United Kingdom. In 1997 Robyn started up her own business, Waste Audit and Consultancy Services. This business works with private businesses and all levels of government in the development of waste reduction programs

In 2000, Robyn commenced a second company, Sustainable Learning Australasia. This company grew as a natural extension of the work she was doing with organisations in changing the way they look at resource management. Education was a fundamental stage in any process. Sustainable Learning Australasia is a registered training organisation and currently has over 400 trainees in the waste industry completing Certificates II, III and IV in Asset Maintenance, Waste Management. In addition Sustainable Learning Australasia works with organisations to develop workplace training programs. They have recently completed a comprehensive workplace training program for Nestle Oceania – "No Waste @ Work".

Paul Perkins
Adjunct Professor in the Centre for Resources and Environment (CRES)
Australian National University

Mr Perkins, adjunct professor in the Centre for resources and Environment (CRES) at the Australian National University, recently retired as CEO of ACTEW Corporation after a successful career in public sector commercial reform and industry leadership of the emerging sustainable development movement. ACTEW is a unique government-owned holding company controlling the ACT's water & sewerage operations and its share in ActewAGL, the first equity based public-private partnership in multi-utility operations in multi-utility services.

Mr Perkins is presently a member of the Federal Government's Business Roundtable on Sustainable Development. He is Chairman of the National Environmental Education Council and also Chairman of the Barton Group, the national CEO alliance responsible for leading implementation by Australian Industry of

the recommendations of the Environment Industry Action Agenda. He previously served on several National Task Forces on Environmental Competitiveness & Export, and Critical Infrastructure.

He is presently adviser to 3 governments on water, sustainability strategies and policy related matters, and is project director of a major national project road mapping industry development opportunities for the Australian water industry.

Jenny Pickles
Manager, Strategy & Regional Programs
EcoRecycle Victoria

Jenny's responsibilities include the development of a 10-year draft Solid Waste Strategy for Victoria; the development, implementation, review, evaluation and monitoring of key organisational performance measures and the provision of strategic advice to the Chief Executive Officer and the Board.

Jenny liaises with the Minister's Office, providing advice and briefings to the Minister and Ministerial Advisers and also manages and oversees a team of sixteen (16) project management staff and a budget of $8 million during 2003/04.

Frouke de Reuver
Senior Project Manager, Business Partnerships Section, Sustainability Programs Division
NSW DEC

A/Prof Daniella Tilbury
Director
ARIES

Daniella Tilbury is Associate Professor in Sustainable Development at Macquarie University, Sydney and Director of the recently launched Australian Research Institute in Education for Sustainability (ARIES). Daniella's doctoral study undertaken at the University of Cambridge in the early 1990s developed a framework for education for sustainability. Since then she has lectured at the postgraduate and undergraduate level in many universities across the globe and facilitated programs for NGOs, corporate and government agencies in education for sustainable development.

Daniella's is internationally recognised for her research and publications in education as a process to engage people in change towards sustainability. She holds a number of international and national responsibilities. She is the Australian research fellow on the OECD's international research program on the environmental education (ENSI). She is also Chair in Education for Sustainable Development for the World Conservation Union (IUCN) and a member of the Executive Bureau of the International Commission on Education and Communication (IUCN). Daniella organised and facilitated the IUCN CEC Seminar 'Engaging People in Sustainability' held in Johannesburg at the World Summit for Sustainable Development. Her education leadership skills were recently acknowledged by Macquarie University through an Outstanding Teacher Award (2002).

Fiona Wain
Chief Executive Officer
Environment Business Australia (EBA)

Fiona Wain has been the CEO of Environment Business Australia (EBA) for five years. She has successfully built the association into a powerful industry development body, 'think tank', and advocacy organisation dealing with environment, industry competitiveness in international markets, and business development issues. She is a national and international spokesperson for the sector, has authored many articles, and is a frequent conference speaker.

Fiona is a member of various advisories on trade, sustainability, climate change, eco-labelling, environment and energy. She has initiated and formed national working groups on land and water; environmental trading; climate change (EBA is recognised as the principal business voice advocating that Australia take a leadership position on climate change); and sustainability and the finance sector.

7.6 References

1 UNCED (1992) *Promoting Education and Public Awareness and Training, Agenda 21,* United Nations Conference on Environment and Development. Conches: UNCED; United Nations (2002) *Plan of Implementation of the World Summit on Sustainable Development.* Available at: http://www.johannesburgsummit.org/html/documents/summit_docs.html (Accessed 29 September 2004).

2 Fien, J. (1993) *Education for the Environment: Critical curriculum theorising and environmental education.* Melbourne: Deakin University; Huckle, J. & Sterling S. (1996) *Education for Sustainability.* London: Earthscan.

3 Tilbury, D. and Wortman, D. (2004) *Engaging People in Sustainability,* Commission on Education and Communication, IUCN, Gland, Switzerland and Cambridge, UK. P. 18.

4 Goldsmith, S. and Samson, D. (2002) *Sustainable Development – State of the Art Asking the Questions.* Issues Paper prepared for the Australian Business Foundation.

5 See: Stratos (2003) *Building Confidence: Corporate Sustainability Reporting in Canada 2003.* Available at: http://www.stratos-sts.com/pages/publica012.htm [Accessed 5 April 2004]; Birch, D. (2002) 'Corporate Citizenship in Australia: Some Ups, Some Downs', *Journal of Corporate Citizenship* (Spring); Australian Conservation Foundation (2002) *Corporate Australia: Stuck in Reverse – the Environmental Performance of Australia's Top 100 Companies.* Available at: http://www.acfonline.org.au/asp/pages/intro.asp?IdTopic=6 [Accessed 30 May 2004].

6 Global Reporting Initiative (2002) *Sustainability Reporting Guidelines.* Available at: http://www.globalreporting.org/guidelines/2002.asp [Accessed 30 May 2004].

7 Tilbury, D., Crawley, C and Berry, F. (2005) *Education About and For Sustainability in Australian Business Schools.* Report prepared by the Australian Research Institute in Education for Sustainability (ARIES), Macquarie University and Arup Sustainability for the Australian Government Department of the Environment and Heritage.

8 Department of the Environment and Heritage (2000) *Environmental Education for a Sustainable Future: National Action Plan.* Canberra: Commonwealth of Australia.

9 Government of Western Australia (2003) *Hope for the Future: The Western Australian State Sustainability Strateg.* Perth: Department of the Premier and Cabinet.

10 NSW Government (2002) *Learning for Sustainability: NSW Environmental Education Plan 2002-2005.* Sydney: NSW Council on Environmental Education.

11 Business Council of Australia (2001) *Statement on Strategies for Sustainable Development.* Melbourne: Business Council of Australia.

12 Tilbury, D. and Cooke, K. (2001) *Building Capacity for a Sustainable Future: Meeting the Needs of Industry through Environmental Education.* Document prepared for the Department of the Environment and Heritage, Canberra.

13 Sustainable Development Education Panel (2003) *Learning to Last: The Government's Sustainable Development Education Strategy.* Draft presented to Ministers.

14 Roome, N. & Oates, A., (1997) 'Corporate Greening in Education for Sustainability' in Sterling, S. & Huckle, J. (eds) *Education for Sustainability.* London: Earthscan.

15 Roome, N. & Oates, A., (1997) 'Corporate Greening in Education for Sustainability' in Sterling, S. & Huckle, J. (eds) *Education for Sustainability.* London: Earthscan.

16 Dunphy, D., Griffiths, A. and Benn, S. (2003) *Organisational Change for Corporate Sustainability.* London: Routledge.

17 Tilbury, D. and Adams, K. (2002) *Corporate Social Responsibility: Benchmarking Good Practice (Summary of Findings)* Report prepared for Sydney Water. Available at: http://www.gse.mq.edu.au/Units/sus_dev/SWCCSR.htm [Accessed 18 May 2004].

18 Tilbury, D. and Adams, K. (2005) *Industry Sustainability Toolkit Project – A Review of Sustainability resources for Industry.* Report prepared prepared by the Australian Research Institute in Education for Sustainability (ARIES), Macquarie University and Arup Sustainability for the Australian Government Department of the Environment and Heritage.

19 Molnar, E. and Mulvihill P.R. (2002) 'Sustainability-focused Organizational Learning: Recent Experiences and New Challenges', *Journal of Environmental Planning and Management,* 46(2): 167-176.

20 Senge, P. (1990) The Fifth Discipline: The Art and Practice of the Learning Organisation New York: Doubleday.

21 Sustainable Development Education Panel (2003) *Learning to Last: The Government's Sustainable Development Education Strategy.* Draft presented to Ministers.

22 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.* Report prepared by the Australian Research Institute in Education for Sustainability (ARIES) for the Australian Government Department of the Environment and Heritage.