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John Carter
Secretary
Education, Employment and Workplace Relations Committee
PO Box 6100, Parliament House Canberra ACT 2600

Re: Inquiry into the Effects of Climate Change on Training and Employment Needs

Thank you for the opportunity to make a submission on this most important matter. The focus of my submission is the need for tertiary institutions to deliver education for sustainability.[1] This focus may seem to be outside the scope of your Committee's inquiry but, as I will illustrate later, it is not possible to have a comprehensive discussion about climate change without discussing the same issues as sustainable development.

Given the international and near universal agreement that sustainable development (and in Australia ecological sustainable development) is what we must pursue, there is no need to argue its case. Similarly, to a degree, Education for Sustainable Development has been supported; as through the UN Decade for Education for Sustainable Development.

Across Australia we have a lot of activity related to education for sustainable development (or sustainability education) occurring in primary and secondary schools, and even pre-school. The recent development of 'Waste Wise schools' and 'Sustainable Schools' have helped to embed the ideas of the 'whole school approach to environmental education' that emerged during the 1980s. This is not to say that all primary and secondary students are well educated about sustainability and what they as individuals can do to conserve resources and reduce pollution; however, research consistently shows that the messages of these education programs are received positively.

Unfortunately, our good efforts in formal education reduce substantially at the end of middle secondary school. Once students move to the senior years and are caught up in the subjects more closely based on the disciplines represented at universities, the focus of their education moves to the specific disciplinary knowledge, which is rarely put in the context of a sustainable environment and society.

[1] The terminology can be confusing. Prior to the early 1990s 'environmental education' was used to embrace education about (bio-physical) environmental issues using practical situations, and providing opportunities for students to take action. Subsequently 'environmental literacy' and/or 'green curriculum' were used, at least in the tertiary sector in Britain and USA, to provide similar experiences. Since the UN Rio Conference, 'education for sustainable development', or 'sustainability education' has built on the earlier bases to add social and economic issues.

When students proceed to tertiary institutions their education tends to retain the disciplinary focus. Certainly there are university programs in environmental engineering, science and studies, and there are similar TAFE programs along with a growing emphasis on environmental competencies in some TAFE programs. I am aware of considerable activity in the TAFE sector to embed environmental and sustainability competency across a range of TAFE activities, but since I have not done any specific investigation in that area, I will confine my comments to the university sector.

In Australia there is a range of individual university subjects that are intended to introduce students to environmental and sustainability issues. However, the number of students who undertake the specialised environmental programs is small. Also, individual subjects are frequently offered as electives, or may represent one subject out of all the 20 - 30 subjects they take for their degrees. Unfortunately these subjects are usually considered to be peripheral to the 'real' (disciplinary) studies, and tend to be discounted by academic staff of the traditional disciplines.

My point is that while there may appear to be a lot of opportunities for tertiary students to gain sustainability education, only a small number are able to take advantage of the opportunities and gain the understanding they need.

When students leave secondary school or tertiary institutions they may become involved in the education activities that have been developed by governments and their agencies as a consequence of Agenda 21 and Australian responses to specific environmental problems, such as Coastcare, Greening Australia, and regional water conservation programs. There are also programs facilitated by the education chapter of Agenda 21, as adopted at the 1992 UN Conference in Rio de Janeiro, for local government applications, such as Cities for Climate Protection. There are many examples of these types of community education programs.

Employees are also a part of the community. Since the mid 1990s, when Environmental Management Systems were given credibility through international standards (ie ISO14001) there has also been a clear context for the introduction of environmental awareness activities in the workplace. In those organisations that have adopted ISO14001 there are requirements for this form of education, but organisations without ISO14001 (the vast majority of Australian businesses) are unlikely to have any such educational activities, since there is nothing to tell them that this is important. Recent 'Green Office' programs and the like have undoubtedly helped to spread awareness and some behaviour change about environmental issues, but how strong these initiatives will be in the face of any economic slow-down will remain to be seen.

At the broader community level there has been a dramatic increase in the extent of environmental coverage through the print and electronic media over the past two years – it appears the 'tipping-point' for this surge in interest has been a combination of factors, such as continuing drought across many parts of Australia, international discussion of climate change (such as Al Gore's film An Inconvenient Truth), and discussion of climate change by high profile Australians (for example Tim Flannery).

However, despite the clear environmentally positive messages within the community ', and the sprinkling of workplace activities, they are fighting against the tide of the bulk of messages that come from society generally and especially the media. These messages, especially through advertising, are focused on consumption of goods and services - and rarely show any acknowledgement of environmental or social considerations. As a consequence, it seems to me, while surveys continue to show that Australians say they are highly concerned about environmental issues, their value set and associated actions are most likely to be swamped by the messages of consumption.

Ideally we need a more 'balanced' message from the advertisers, so that sustainability issues are covered in the information given about products and services. However, I do not hold out much hope for that[2]. The alternative is to ensure that people leaving schools and tertiary education have a strong and enduring sustainability education. Members of the community will then have the capability of understanding the environmental and social contexts of their consumption, and have the capacity to think about alternatives that can minimise their 'ecological footprint'.

As I have indicated above we have a 'hole' in sustainability education after middle school. Clearly we should ensure that sustainability education continues through the senior secondary and tertiary curricula. Since I have only a limited understanding of the secondary curriculum I am not in a position to suggest how this might be achieved; however, under the current system for university entrance, it would help no end if universities were to recommend environmental science or studies for entrance.

My expertise is in the tertiary sector. From my 20 years experience in universities and in researching environmental education, it is apparent that the speciality environmental programs have barely maintained their 'market share' of the student population (while their enrolments have increased somewhat, the overall student population has increased more quickly). Nonetheless, we can be encouraged by the number of individual environment/sustainability subjects that have been introduced and are sought after by students. However, as I pointed out previously, these isolated exposures to sustainability do little to cover the many aspects of sustainability and do not ensure that it is placed in the context of their disciplines/professions.

To change this situation, and to ensure that all tertiary graduates have environmental or sustainability 'literacy', we need the principles of sustainability to be embedded in the curricula of all university degrees and TAFE programs. This is particularly important for students doing their TAFE Certificate or undergraduate (first) degree as this is a formative stage in their professional employment, and they are the majority of students.

There is a lot of support for sustainability education. World wide universities have signed up to several agreements that pledge them to 'across curriculum sustainability education'; the Talloires Declaration is well recognised and has

[2] The response of the large Australian retailers to changing their practise of giving customers free plastic carry-bags is an example of the low priority given to environmental issues.

been signed by over 370 institutions from 47 countries across five continents. In Australia, 13 universities are signatories to Talloires yet there is little evidence that sustainability education is reaching more than a token number of students; the paper I have attached (Lang etal 2006) provides a summary of recent research on this point. The recent AVCC Policy on Education for Sustainable Development (2006) apparently has made little difference to this situation.

My research and anecdotal information indicates there is a lot of 'good will' regarding the introduction of sustainability education for all undergraduates. However, there are clearly substantial barriers impeding it. These issues are also covered in my paper (attached), but two issues stand out as especially important.

First there is the need for active participation in this curriculum change by the university heads/leaders (department/school heads, deans, and the most senior academic and administrative managers). Second is the need for academics (the teachers) to be provided with staff development so that they can be confident to introduce the principles and examples of sustainability into their teaching. It is most important to recognise that staff development is not the same as producing model curricula and packs of materials for academics to use. These are adjuncts to staff development, but as I have pointed out in my paper (attached), we already have more than enough examples and resources - what is missing is the guidance and time for the academics to absorb and apply the information into their teaching.

An example of staff development is the project we have undertaken at RMIT. The Beyond Leather Patches (BELP) project was undertaken in 2005 to facilitate action research and learning for a sample of academics in the School of Management, and School of Property Construction and Project Management to revise their curricula to include Education for Sustainability (the project is reported in the attached book chapter, Holdsworth etal, 2006). There are two important aspects to this project.

First, it was funded by a Victorian government department to embed 'green-house education' into the curriculum. However, as soon as the academics began discussing green-house issues it became apparent they were talking about the broader are of sustainability, and it became artificial to try to separate the two. As a consequence the project focused on sustainability in general, and used green-house or climate change examples for illustration.

Second, the basis of the action research was not to provide a definition of sustainability or blue-print of what the academics should teach. Rather, BELP operated under two key principles:

. the appreciation of the context in which the work is taking place.
. sustainability was not defined by the project team, but was developed as a concept relevant to each School and associated profession.

As a consequence, curriculum material was developed so that student learning outcomes focussed on current and potential professional values and practices; in other words the focus was on the pedagogy rather than specific content.

This approach to curriculum, based on staff development, has provided the basis of continuing work at RMIT, through an ARC Linkage Grant, and for submissions to develop university education for climate change (though a 2007 expression of interest to the Department of Environment and Water Resources), and to develop university education for corporate social responsibility in Vietnam (through a 2008 expression of interest to the United Nations Development Program).

While this is but one approach to staff development it is one that has a greatest potential to ensure that the desired curriculum change is undertaken. Universities are not places where academics can be directed in their teaching, so requiring them to follow some centrally developed curriculum approach is most unlikely to work. Equally, simply providing materials and model subjects will bring about only little change unless the academics are trained in their use. Importantly, an emphasis on materials, ie content, is not the key issue for education for sustainability. Rather, the issue is the need to focus on the pedagogy (as became very clear in the BELP project) since sustainability requires academics and their students to explore, communicate, and think.

These points are directly relevant to climate change education since the issues are so similar. In particular in both cases we need to explore issues that cross environmental, social and economic domains. In both cases the situation must be explored from a systemic perspective. In both cases there are no simple ('right') solutions, only situations where people need to use critical thinking to examine the issues, the possible options, and develop processes for making choices.

To this point I have concentrated on the training (preferably education) part of the terms of reference.

While I am not an expert in employment trends, I seem to be one of the few academics in Australia with an interest in the environment profession. In 2004, in conjunction with the Environmental Jobs network, we conducted a survey of environmental careers across Australia (see attached paper Thomas etal, 2007). The data at that stage indicated that there was a wide breadth and growth in the environment profession. The Australian Jobs 2007, from the Department of Employment and Work Place Relations,
lent weight to this by indicating good demand for environmental scientists and for policy analysts.

Anecdotal information shows that these trends are continuing, facilitated by government regulation and the interests of business and the community. Government initiatives, like the Commonwealth's National Greenhouse and Energy Reporting Act 2007 and regulations under the Victorian Environment Protection Act, requiring Environment and Resource Efficiency Plans, are instances where requirements for green-house gas auditing and reporting will lead to new responsibilities for organisations, and new jobs. To illustrate this increasing demand I have four examples:

. articles in 'trade journals' over the past two years have been pointing out that environmental consultants have been finding difficulty in finding enough suitably qualified environmental staff

. recognition of the dearth of people with any training or experience in green-house or sustainability auditing an reporting has led us at RMIT to plan a short-course for those working in industry who have recently been given these auditing and reporting responsibility - we are about to advertise the course so we do not yet know the response, but the government agencies and non-government organisations who are advising us have confirmed the dire need for the course
. in Victoria those organisations concerned with environmental education and the environmental profession have been discussing how to increase the number of students who take environmental subjects and programs that will lead them into the environmental profession – participants in this discussion has recently broadened to include industry representatives, who again comment on the need to have more people training in the environment field, especially in relation to energy and green-house
. increasing coverage of environmental and sustainability employment opportunities in the media, notable the 'green careers' supplements produced by the Australian and Age earlier in the year, the recent Australian article (Weekend Professional, 23-24 August, 2008, pdf attached) and the forthcoming Age career supplement (mid September I understand).

Of course there is a strong connection between the provision of a curriculum based on education for sustainability and the education of environmental and climate change literate professionals. When education for sustainability is undertaken across all disciplines/professions the graduates will have the basic understanding of climate change and the capability to tackle climate change problems. In other words, while they may not be the experts in the details of climate change minimisation and adaptation, they will have the understanding to play a part in reducing climate change problems, and, importantly, be able to communicate with the experts when needed.

Clearly we will still need the environmental cum climate change experts in the areas of science, policy and studies, and economics. This is where it will be important to promote these professional fields to students in school, and even to the older career-changers.

So to summarise, and emphasise the key issues touched on above:

. technical mechanisms for sustainability (such as energy efficient lighting) and structural/administrative mechanisms (such as kerb side collection of recyclables) are important aspects for sustainability, but as important is the education to ensure that people know about the other mechanisms and are predisposed to make use of them

. there have been, and are, many initiatives in Australia related to environmental/sustainability education

. the 'positive sustainability' messages that school children might receive in primary and secondary schools are strongly countered by the

focus on traditional disciplinary knowledge in senior secondary school, and in tertiary education - and through the media

. across tertiary programs few students receive more that an introduction to sustainability - where this exposure comes through only one subject, students may find pressure from staff of traditional disciplinary fields to put a low priority on sustainability

. Australian universities and their staff are generally in support of sustainability education, but there is little evidence of its introduction across the curriculum of the universities, for provision of this education to all undergraduate students

. across curriculum tertiary sustainability education requires active participation in this curriculum change by the university heads/leaders, and requires staff development so that the teachers can be confident to introduce the principles and examples of sustainability into their teaching

. the Education, Employment and Workplace Relations Committee should build on the AVCC sustainability policy to put more pressure on universities to commit to the implementation of across curriculum sustainability education

. to support this implementation the Education, Employment and Workplace Relations Committee should explore means to provide universities with the resources that will be needed to implement the staff development programs that are essential if curriculum change is to eventuate – ideally an action research and learning model should be used for staff development

. in view of the expansion in the range and number of environmental employment opportunities there is a need to ensure that students are attracted to subjects and programs that will provide them with the necessary education, and here the Education, Employment and Workplace Relations Committee should explore means to promote these careers and pathways (such as the provision of information to students in the later secondary years)

Yours sincerely

Associate Professor Ian Thomas

Attached material –

Hartman, K. (2008) Benefits in Going Green Now, *The Australian*, Weekend Professional, 23-24 August, p1.

Holdsworth, S., Bekessy, S., Hayles, C., Mnguni, P. and Thomas, I. (2006) Beyond Leather Patches Project for Sustainability Education at RMIT, in Filho, W.L. and Carpenter, D. (eds), *University Sustainability in the Australasian University Context*, Peter Lang Scientific Publishers, Frankfurt, pp107-128.

Lang, J., Thomas, I. and Wilson, A. (2006) Education for Sustainability in Australian Universities: Where is the Action?, *Australian Journal for Environmental Education*, Vol. 22, pp45-58.

Thomas, I., Lane, R. Ribon-Tobon, L. and May, C. (2007) Careers in the Environment in Australia: Surveying Environmental Jobs, *Environmental Education Research*, Vol. 13, No.1, pp97-117.