NATIONAL CENTRE FOR SUSTAINABILITY SWINBURNE UNIVERSITY OF TECHNOLOGY

DRAFT RESPONSE TO:

THE SENATE

STANDING COMMITTEE ON EDUCATION, EMPLOYMENT AND WORKPLACE RELATIONS

Inquiry into the Effects of Climate Change on Training & Employment Needs

The Senate has referred to its Education, Employment and Workplace Relations Committee an inquiry into the effects of climate change on training and employment needs.

The terms of reference include the ability of universities and other research and training institutions, including TAFE institutes, to meet current and future demand for climate change professionals and measures to assist understanding of climate change in the Asia-Pacific region, including provision of training and skills assistance.

The committee has not yet determined its approach to this inquiry but recognises the rapidly changing circumstances and emerging issues associated with this area of policy. Your comments on the terms of reference and other issues you believe to be relevant to the inquiry would be welcome. The committee will report by 20 March 2009.

THE NATIONAL CENTRE FOR SUSTAINABILITY AT SWINBURNE

Swinburne University of Technology is an intersectorial TAFE and higher education institution encompassing the further, vocational and higher education sectors. The National Centre for Sustainability (NCS) at Swinburne provides educational leadership in the emerging and evolving sustainability environment encompassing education for climate change adaptation and mitigation, sustainability education for professional and community uptake, as well as skills training for the green collar economy. The NCS works in partnership with industry, government and community to undertake program delivery, resource development, project work and applied research to support the development of sustainable practices in business, education, government and the community. The NCS sees the relationship between education for climate change adaptation and mitigation knowledge, skills and behavior as overlapping the sustainability education for professional and community markets *and* the emerging green collar economy training needs (as articulated by the recent CSIRO/Dusseldorf report). Mapping these strands of the education for climate change and sustainability environment and the different cultural and structural variables embedded in the Vocational Education and Training and Higher Education sectors are challenging to map and navigate for the purposes of this Senate Inquiry.

The National Centre for Sustainability provides commercial, government and non-profit organisations with a range of services. These include:

1 Courses and mentoring in sustainability tailored to industry and community needs
2 Courses in sustainability strategy development from policy to practice
3 Stakeholder engagement

4 Market research
5 Educational research
6 Project management.

The NCS has developed a suite of accredited and short courses for sustainability professionals including a Diploma of Sustainability and a Graduate Certificate in Sustainability in addition to green collar skills in Carbon Accounting and Energy Efficiency. NCS has also developed the Guideline Competency Standards for Sustainability (NQF noted) (http://www.swinburne.edu.au/ncs/researchprojects/guideline.htm and influenced their uptake in the Business Services, General Construction, Manufacturing and Seafood Services training packages. From these experiences of innovation in education of climate change and sustainability professionals we would like to make the following observations and recommendations.

THE CASE FOR ACTION IN EDUCATION FOR SUSTAINABILITY

The NCS appreciates the Senate Inquiry into the Effects of Climate Change on Training and Employment and the opportunity to input our experience into Government. The Senate Committee will be aware of and responding to the urgency that drives many in the education for climate change and sustainability sector. The NCS is driven by the climate change global emergency that we consider is not being seriously addressed by government:

1 Australia and the world are at a turning point. International assessments point to a threshold for 'dangerous' climate change of approximately 2 C above pre-industrial temperatures and given current greenhouse gas levels and projected emissions, it is already unlikely that we will achieve this threshold. Whilst the impact of climate change varies significantly from one region to the other around the globe, the Asia Pacific region will experience adverse consequences (CSIRO Climate Change in the Asia Pacific Region 2006). Climate change is the greatest challenge facing humanity and there is no more urgent agenda for educational leadership. The Garnaut Report is out and the form of Australia's Emissions Trading Scheme (Carbon Pollution Reduction Scheme) is under consideration. Australia is committed to a transition to a low carbon economy with reductions of net greenhouse emissions of 60-90% by 2050.

2 The CSIRO Report to the Dusseldorf Skills Forum (June 2008) outlined the significant labour challenges in reducing our greenhouse emissions and national environmental footprint. Achieving the transition to a low carbon economy will require massive mobilisation of skills and training - both to equip new workers and to enable changes in practices by the 3 million workers already employed in the key sectors influencing our environmental footprint. Current approaches are no where near sufficient to meet these challenges. The CSIRO report found that current information on green skills and workforce capabilities are very poor. The CSIRO review was not able to identify comprehensive or consistent data about green collar jobs either in Australia or in other countries. There is evidence that skills shortages are affecting consumers ability to switch to more sustainable or energy efficient alternatives and there is little information about the consumer demand for green products and services. Employment in sectors with high potential environmental impacts will grow strongly with projected increases of more than 10% over 10 years. This will add 230,000 to 340,000 new jobs – in addition to normal employment turnover – in the transport, construction, agriculture, manufacturing and mining sectors. These employees must be sustainability literate *before* they enter the

workforce with green collar skills as well as personally empowered through education for sustainability.

3 The Asia Pacific region has a high vulnerability to tropical cyclones, rainfall extremes, frequent droughts and extreme tides and these are projected to increase. The adverse impacts will be felt in coastal communities, ecosystem and biodiversity, disease and heat related mortality, water resources, agriculture and forestry, and their related impacts on regional economies - many of which are already vulnerable. The region will be affected by a rise in sea level of 3-16 cms by 2050 and 7-50 cms by 2070. The entire region will require a workforce skilled in developing and implementing climate change mitigation and adaptation specific strategies. Australia is a major exporter of post secondary education to the Asia Pacific region with a 12.5% share of all cross border students and particularly to Oceania with a 42% share (Marginson and McBurnie, 2003). The English speaking OECD countries of the US, the UK, Canada and Australia have seen a spectacular growth in the flow of students from the Asia Pacific region with the rise in the middle classes in East and South East Asia in the 1980's and 1990's. This era of climate change mitigation and adaptation carry strategic regional and educational responsibilities for this export industry.

1 United Nations Decade for Sustainable Development (2005-2014) challenges all countries to integrate sustainability into education plans at all levels and sectors and Australia needs a massive effort in 'top down' and 'bottom up' initiatives to have any chance of achieving this goal. Further and higher education institutions are now educating the next generation of decision makers. Making the transition to a low carbon economy is a local and a global challenge and will require all educational institutions to shift paradigms for all new and existing courses.

WHAT IS EDUCATION FOR SUSTAINABILITY?

Education for sustainability aims to go beyond individual behaviour change or single actions often associated with education for the environment. It seeks to implement systemic change within schools, universities, technical colleges, government, business, industry and society. EfS programs examine how people, organisations and institutions can live in sustainable ways. It is about empowering people to contribute to a better future through mindset changes, critical reflection and building new skills.

There is much agreement around the world on how to educate for sustainability:

1 Transformative education rather than transmissive and hence learner centred, interactive, critical thinking, experiential, future oriented and context driven….
2 Transdisciplinary and interdisciplinary in emphases and drawing on action research as a common tool
3 Societal problem solving orientation in education and action research through a broad range of interactions
4 Networks and collaboration to efficiently share resources and strategies and not compete
5 Leadership and vision that promotes change accompanied by central process for assigning incentives, responsibilities, accountabilities and rewards

EfS is not only interdisciplinary at its foundation but challenging traditional educational objectives through wanting action and change in behavior as educational outcomes. This universal agreement on the principles of education for sustainability contains optimism and

despair as well as challenges for the uptake of EfS in educational institutions. Whilst the agreement on EfS principles provides an important and cohesive knowledge base for institutional uptake, the progressive nature of these principles will challenge a system that has often relied on traditional transmissive approaches to curriculum and teaching. The development of EfS programs require educationally skilled curriculum developers and teachers with the capacity to translate these principles into innovative curriculum and teaching contexts.

EDUCATION FOR SUSTAINABILITY ISSUES IN FURTHER & HIGHER EDUCATION

Change towards sustainability in the Further and HE sectors will require more evolution than revolution. There is deep resistance from many academics and teachers feeling stretched in an often devalued and overworked post-secondary sector that has had numerous cutbacks in staffing and resources. Learning for sustainability has implications for the core of the institutional culture, influencing the decisions and management procedures and resourcing of the whole institution and sector. The sector will need 'top down' system level incentives and accountabilities to gain a shift in momentum as well as the ongoing work of the many 'champions' already working for change with little support. Most current sustainability issues tend to focus on single projects or courses to address sustainability as apposed to taking a more systemic view of learning and change across the institution. The deeper challenge is to link campus management to research, curriculum, teaching, business and consultancy partnerships as well as community outreach.

The key EfS areas for change are institutional policies, staff professional development, development of teaching and learning resources, the revision of existing courses and the provision of new courses. Many Further and HE institutions have declarations and sound institutional missions, visions and policies but little translation of these into practice. Whilst most Further and HE institutions have tackled campus greening, some have tackled the development and delivery of specialist sustainability courses, very few have tackled the integration of EfS into existing courses. The sector needs forums for critical reflection and discussion of the EfS concept and the 'sites' to develop a shared understanding and consistent approaches to EfS

Australia educates many undergraduates and postgraduates from the Asia Pacific and there must be a system level review and reform of our contribution to education in the Asia Pacific in response to the current and anticipated impacts of climate change on the region. Educating and training graduates from the Asia Pacific will require an urgent rethink in order to equip graduates NOW for the climate adaptation and climate mitigation strategies and management over the next 20 years. Australia will increasingly be drawn on as the resource rich power in the region to support climate change refugees and climate mitigation strategies and resources.

REVIEWING THE VET SECTOR FOR AN ECOLOGICALLY SUSTAINABLE FUTURE.

The VET sector has traditionally relied on its role in training the workforce for industry. As such it is positioned within the prevailing labour market and has limited flexibility to respond to or initiate new markets and emerging technological needs such as skilling the green collar economy. The recent Victorian State Government Discussion Paper on Skills Reform (Securing our Future Economic Prosperity April 2008) is an example of the VET sector being trapped in the existing narrative where industry training silos are prioritised over global ecological interests and the future low carbon economy. Here skills shortages are viewed within the existing industries and the need for existing patterns of production and consumption rather than the future low carbon economy and how we are going to make the transition to a new paradigm. There is little mention

of the green collar economy and skills gaps for the future.

Government, business and industry bodies are good at identifying current and obviously imminent skills shortages and training needs, but are less able to identify emerging and future skills shortages and training. Innovators within the sustainability business and industry report frustration with the 'just in time' focus and direction of peak industry bodies, government and training providers. Individuals on the ground are often better at picking trends and economic opportunities. Resource development and the allocation of training hours generally require established demand as criteria for implementing new and existing courses. The irony of this planning paradigm is that by the time the demand is broadly evident we are already in the midst of a skills shortage and planning from 'behind'. Education for sustainability and climate change is a classic example of where there needs to a 'site' made within the system for emerging and future skills shortages.

The structure of the training system is geared towards the 'status quo' rather than the future. One of the contributing factors in sustainability skills shortages is the subsidies for "status quo" industries and processes which stifle natural market forces for new training development. Market signals and other early indicators of alternative industries simply cannot get the same due consideration for policy direction and economic strategy in such an environment. For example innovative 'green' car manufacturing has been hampered for many years by Federal and State support for traditional, non-sustainable car manufacturing. Therefore, majority skills demand is centred around the traditional, non-sustainable combustion engine industry. This further disadvantages Victorians (and Australians) in the fast approaching time when the rise in fuel costs and fuel shortages and the introduction of a carbon tax will require the sorts of innovations, research and industry support that proponents needed to have received ten years ago. Plumbing, horticulture and construction industries have experienced the same "status quo" undermining of greening processes and technologies.

Quality control and a stringent accreditation process are essential attributes to the VET system. However, the process of establishing a new training package are too arduous and time consuming when there are new and emerging pockets of demand, or an industry is too new to have done the lobbying or have the power base to establish itself as an industry player. Industry is forced in these circumstances to provide its own 'on the job' training and unaccredited learning. For example solar hot-water heater installers for many years have had no formal upgrade opportunities to their plumbing qualifications and nearly a decade worth of solar water heaters have been installed with only manufacturer instructions as a guide. In 1994 there was only one formal solar plumbing elective unit available to plumbers (Queensland) and that was not able to be studied beyond first year. Broad recognition of the trends and demand is difficult for emerging industries to establish. The system of established Industry Skills Councils and Registered Training Organisations currently reflect the existing industries and the power to influence. This system does not have the flexibility to initiate and respond to new green collar workforce demands.

We recommend the review and reform of our training system to ensure our training system can lead and innovate the transition to the new green collar economy and not be stuck in the existing paradigm. The new system must be proactive in initiating green collar training opportunities and reactive where individual and green industry needs can be addressed when they cannot currently be satisfied by an RTO.

NCS KEY RECOMMENDATIONS TO THE SENATE INQUIRY

In summary, our experience as a leader in education for sustainability in Australia reiterates what many others in the sector have submitted to various forums and inquiries over the past 5 years. The NCS recommendations:

1 **Establish system level incentives and policy settings** to support innovation and development of education for sustainability in both the VET and HE sectors

2 **Establish an Education for Sustainability 'Bank' to fund, develop and document** whole of institution approaches to learning based change for sustainability across all new and existing education and training courses. (The UK and Canada already have successful funds to support EfS in institutions). Guidelines will need to focus on models that build capacity of all staff to integrate sustainability into their curriculum and teaching as well as establish the 'green metrics' for measuring the greening of all sections of the further and higher education sectors - administration, campus, research, curriculum, partnerships. Work with and adequately fund current RTO's and universities to build the skills and knowledge for pre-service and post-service teachers for transformative sustainability education.

3 **Review of the provision of new and existing training opportunities** in the VET sector to accommodate the development and transit to a low carbon economy and form new partnerships between institutions and with business, government and non government organisations to strengthen and share opportunities to innovate and invest in education and training for the new green collar economy. Provide ISC's and those developing new Training Packages with greater flexibility to endorse newly revised Training Packages to speed up the processes.

4 **Research and review the education and training of international students from the Asia Pacific region** (and Oceania in particular) in order to reform our contribution to education in the Asia Pacific in response to the adverse impacts of climate change on the region.

5 **Research to identify the Australian skills shortages** through the development of a shared broad understanding of the types of skills required, and the likely demand for these over the period 2010 -15 and 2015 -20 to develop new training pathways, accreditation systems and coordination of key stakeholders (CSIRO Dusseldorf 2008 Report).