

# INQUIRY INTO THE EFFECTS OF CLIMATE CHANGE ON TRAINING AND EMPLOYMENT NEEDS

Submission to the Senate Employment,  
Workplace Relations and Education Committee

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**‘We have options, but the past is not one of them’.** [Sauchin, D. and S. Kulshreshtha in D. S. Lemmen et.al., eds. (2008) *From Impacts to Adaptation: Canada in a Changing Climate 2007: 21*].

## TERMS OF REFERENCE

*The Committee will inquire into and report on developing Australia’s capacity in the area of climate change, with particular reference to:*

- a. the ability of universities and other research and training institutions to meet current and future demand for climate change professionals; and*
- b. measures to assist understanding of climate change in the Asia-Pacific region, including provision of training and skills assistance.*

### 1. FRAMING THE ISSUE

The role of education and training for the future of work in a warming world is a late entry in the Australian debate about response to climate change. Given the reality of global warming in this warmest of developed countries, how we work, where we work, who gets the jobs, how industries adapt their products and production processes, have been surprisingly neglected issues. Yet universalising environmental literacy and skills is essential for Australia’s international competitiveness in the emerging clean-energy economy. Adaptation of work practices for the clean-energy revolution is inevitable, as

much for the present generation as for the next generations. Whatever the occupation, profession, industrial sector or service sector, educating and training in environmental literacy in the broadest sense, is fast becoming the key to getting a job, keeping it, and prospering in it.

One example of how Australian business sees the need for information: An on-line survey was carried out in 2008 to understand the challenges that lawyers, accountants, consultants and senior managers face in dealing with the recent and impending regulations in environmental law. The respondents represented a large cross-section of the public and private sectors in many job roles. The conclusions were:

- Access to a climate change resource is important
- Information is needed now and will be required often
- The biggest challenge is keeping up to date with change
- Professionals' don't know where to find the information
- Information on Carbon tax & emissions trading is the most important requirement.

This brief example reflects an important reality. These occupations are not “areas for new green jobs”. They are not “areas which will be completely disrupted by climate change”. They are, however, areas of the economy, like many others, where those who work in them will need significant training in the new climate change realities simply in order to continue to be able to do their jobs.

We know very little, however, about what environmental literacy Australia's education and training providers are currently providing. The questions of what environmentally-aware skills and education are needed across the range of vastly different occupations and professions, who provides environmentally-knowledgeable training and education, how content is determined, who gets access to that training, are only now being raised.

## **2. THE CENTRAL QUESTIONS FOR THIS INQUIRY**

**What demands does the climate 'revolution' make on Australian education and training?** Minimally, the climate revolution will require new and different training or retraining for hundreds of thousands, if not millions, of members of the present and next generation of the Australian work force.

1. What levels of public policy, government and sectoral regulation are responsible for preparing and funding Australian education and training providers for greening their provision of education and training?

2. What environmental literacy measures, programmes, publicly-accessible online information are presently available?
3. Are para-governmental groups (like the industrial skills councils) being drawn in to the green turn?

**Can Australian education, training and research providers meet present and future demand for a climate-trained work force, environmentally responsible technology, and adaptable work practices?**

1. What measures are in place or planned to upskill existing teaching staff and recruit new staff with environmental skills and literacy?
2. How effectively do training and research institutions respond to the demand for an environmentally responsible adaptation of technology and work design?
3. How effectively do education and training institutions educate and train an environmentally knowledgeable labour force?
4. What level of environmental literacy currently exists among secondary-school students? If it is uneven, what accounts for the unevenness?

**The short answer to each of these questions is: beyond fragmented and anecdotal information, we do not know the answer.**

In 2009, this feels new to us: the challenge to provide new kinds of education to foster new skills and professions takes place under the shadow of global warming, and is perceived more as threat than as opportunity.

A generation ago however, the information-processing computer revolution transformed every economic sector, profession and occupation and the way they produced their goods and services. Since then, the computer revolution has revolutionised the economy world-wide, contributing to the new wave of globalisation. It has, however, only partially transformed education and training.

Today, the climate change revolution poses an expanded challenge to education, deepened by the unfinished revolution in education a generation ago. Global warming is threatening fundamental elements in Australia's eco-system and hence its economy, communities, social beliefs, and societal resources. As a driver of change, climate change is radical, urgent and threatening – a very different proposition from the promise and dislocation of the computer revolution.

Globally, climate change has begun to impact work design and the distribution of employment and people within and between countries, regions and communities. While offering the promise of an economy reconfigured around green jobs, global warming also threatens to create regionally and industrially clustered unemployment and climate-induced labour migration. Key Australian sectors are affected directly by global warming or indirectly by measures to reduce greenhouse gas emissions and by the emergence of green technologies. Occupations and professions confront the need for new training and retraining to match the skill demands and provide employment pathways for those newly entering the labour market as well as those struggling to remain employed. In many sectors, global warming can be identified as the pivotal factor in deepening sectoral unemployment, disrupting regional labour markets, and creating new industrial relations tensions around 'labour market adjustment'. In some industries, climate change is one of a 'cluster of vulnerabilities'. In others, it is *primus inter pares*. And in still others, global warming offers unexpected opportunities to save employment by adapting it.

Public policy is, at present, focusing on mitigation of greenhouse gas emissions and water use, with inadequate engagement with the development and use of renewable energy. In addition, we are operating without comprehensive knowledge about the environmental dimensions of current practices of production in the private, government and community sectors. Because we have not, to date, launched a national audit of the environmental implications of current practices of production in corporations, government bodies and community organisations, we are unable to confidently set baselines from which to adapt work design, 'climatise' technology, and develop new training for environmentally responsible occupational practices.

We need to be clear about the context in which to assess the ability of education providers to respond to the emerging need for climate-training and education.

### 3. THE TWO SUSTAINABILITIES

The context is unprecedented: the rapid and geographically uneven global warming of the geophysical environment. At this critical juncture in Australia – the unexpected global economic crisis intersecting with a speedup in global warming-- there is a real risk that **environmental sustainability** and **economic sustainability** are being placed in competition. It is essential to assess our climate training and education needs in function of the interdependence of economic and environmental sustainabilities. **In other words, a green turn in work design and employment practices is essential for environmental sustainability. It is also essential for future economic sustainability.**

In preparing the Australian workforce to shape and respond to climate change, education will be central and training will be central. Indeed, we may argue that climate-oriented education and training can serve as the link between environmental and economic sustainability. As recent Australian studies in 2008 have suggested, and a 2007 European Union study supports, green adaptation of all technology is unavoidable. And green adaptation both of technology and work design has already given new life to manufacturing in several developed economies, encouraging governments to intervene with financial support for R and D, education, training, corporate incubation, pilot projects, infrastructure support and international marketing strategies.

We believe that economic and environmental sustainability, far from being competitors, are increasingly interdependent, both crucial to Australia's future. Australia's capacity to prepare a work force able to provide environmentally advanced skills and knowledge must be assessed in function of the interdependence of economic sustainability and environmental sustainability.

#### **4. SUSTAINABLE SKILLS**

##### **How can linking the greening of education and training and the adaptation of work and employment be developed more ambitiously?**

Two of the key areas of Australia's response to climate change are emissions reduction and a wide and inclusive shift to renewable energy. Together these entail the technological retooling of virtually every industry and service in the Australian economy, and every sector.

This will call for a wide adaptation of the whole Australian culture of materials and energy use, for the introduction of new manufacturing firms which produce green technology (which will invigorate our threatened manufacturing sector, as it has Germany's), and for new occupations to be encouraged, new labour market pathways, and new industries.

##### **Some occupations and professions that an Australian climate turn will need:**

1. Researchers and designers of new technology;
2. Specialists (in-house, private consultant, government personnel in:
  - a. adapting existing productive technology and work-design in existing firms,
  - b. introducing new systems and technology;
3. Environmentally trained professionals such as lawyers, architects, engineers, accountants, industrial relationists, and occupational health & safety specialists;

4. Entrepreneurs in green tech firms;
5. A retrained workforce to produce, install and service new or adapted technology
6. Popularisers: educators of the public in environmental literacy

## 5. CONCLUSION

Global warming's relation to work and employment is more complex than a question of unilateral 'impact': climate change and work influence each other reciprocally over time. The interaction is complex: how we change the organisation of work, work design and employment, will itself influence the rate of climate change. To reduce Australia's emissions over the next 20 or 30 years will require a wide shift to renewable energy. It will also require the technological retooling not only of agriculture, resources, mining and manufacturing, but of every industry, sector and service, both public and private, of consumer behaviour, and of living patterns. In turn these shifts will require different training and education for the Australian labour force. In preparing Australians to shape and respond to climate change, education will be central and training will be central.