



Futureworld Eco-Technology Centre

Patron: The Hon. Bob Carr

**AUSTRALIAN SENATE
SELECT COMMITTEE
INQUIRY
ON FUEL AND ENERGY**

**SUBMISSION TO THE PUBLIC HEARING
AT WOLLONGONG, NSW**

**By Futureworld National Centre for
Appropriate Technology Inc.**

WEDNESDAY 1ST APRIL 2009

AUSTRALIAN SENATE SELECT COMMITTEE INQUIRY ON FUEL AND ENERGY

Submission to the Public Hearing at Wollongong, NSW
Wednesday 1st April, 2009

By Futureworld National Centre for Appropriate Technology

Introduction

Futureworld National Centre for Appropriate Technology (NCAT) is supportive of any policy that increases the efficiency of energy use or the attractiveness of renewable energy. An emissions trading scheme is likely to increase the cost of non-renewable energy and, as such, achieve both efficiency improvements and an increase in the use of renewable energy [*].

Over the last 17 years, Futureworld has engaged with both the developers of clean energy technologies and the community. Our submission outlines some of our successes in engaging and empowering the community in their clean energy choices.

Our goal has been to facilitate the research and development, commercialisation and adoption of clean energy technologies throughout the region. We consider an emissions trading scheme to be broadly compatible with that goal. However, we are concerned that the current draft legislation does not sufficiently remove the barriers to the adoption of clean energy technology that now exist.

1. Futureworld Achievements since 1992:

In order to achieve our goal of facilitating the development, commercialisation and adoption of clean energy technology, we have brokered significant links between the proponents of new technology and the community. We have done this in a variety of ways such as by establishing demonstration sites; establishing the Futureworld Eco-Technology Centre; developing a unique collection of exhibits and interactive displays; hosting community seminars and workshops; hosting visits by state and federal politicians, and visiting international scientists; developing innovative educational programs and products; and have continually disseminated information through regular media releases, publications, email, website and newsletters and much more. Following are some examples of our achievements.

Futureworld has:

- publicised the need for the wider community to become reliably informed about the challenges of climate change, and the need to develop sustainable innovative technological responses that will reduce or mitigate the impacts of climate change.
- demonstrated innovative renewable energy and energy efficient technologies based on e.g. solar power, wind power, wave power, micro-hydro, energy efficient building design, energy efficient transport (including hybrid vehicles) and energy efficient consumer choice.

- promoted energy efficiency and energy conservation measures via seminars, workshops and guided tours (on site at Cringila, and at the Futureworld Eco-Technology Centre, first at Coniston, and now at Lake Illawarra).
- delivered a unique hands-on regularly updated *Futureworld Schools Program* in the form of interactive experiential learning techniques linked to the Futureworld displays, presented by trained volunteer guides and tailored to meet the needs of primary, high school and TAFE students.
- developed and constructed a modular energy tower (solar and wind power) at Cringila designed to provide energy during bushfires when there is no mains electricity.
- demonstrated and supported, by means of onsite displays and workshops, the commercialisation of a number of unique Australian alternative energy-based inventions eg *Solar Sailor* (solar powered ferries), *Oceanlinx* (wave power to energy).
- demonstrated a range of household consumer-choice based energy conservation and efficiency technologies eg insulation, glazing, refrigerator, solar hot water, showers, washing machine, and green building technologies (including the energy use based on various efficient water consumption technologies); we even display a vertical axis wind turbine used for milling grain (thought to be used in Persia many hundreds of years BC).
- published *My Good Home Guide* as a simple but reliable guide to informed consumer choice (see attached).
- demonstrated a range of sustainable transport technologies eg mass transit, rail-based transport, pedal power and foot power, all of which are more energy efficient than road-based transport;
- promoted the choice of more energy efficient cars eg hybrids such as Toyota Prius and Honda Civic (Sprite).
- developed a highly targeted high school renewable energy education and awareness program, delivered via the *Futureworld Schools Program* (sponsored by Integral Energy since 2006; Integral also donated \$25,000 of solar cells and an Eco-House)
- delivered a very comprehensive community education and awareness program, through numerous public seminars/workshops (see attachment) and guided tours (either low cost or free) since 1993.
- attracted significant sponsorship by business and industry eg Solar Sailor, Oceanlinx, University of Wollongong, BlueScope Steel, Integral Energy, Hatch, ABB, Energetech, Access Lawyers, FX Larkin, Steve Benko Energy, and government departments eg NSW Premiers Dept., Dept. of Energy, Utilities and Sustainability, NSW Roads and Traffic Authority, etc.

- has continuously benefited from the knowledge and experience provided by the Futureworld Board of Directors based on their professional backgrounds in engineering, commerce, environmental management, community health and environmental education.

As a consequence of the experience we have gained through the above activities, Futureworld is well positioned to advise the Senate Select Inquiry on the impact of an emissions trading scheme on the regional fuel and energy industry.

In particular, our focus is on how the emissions trading scheme can be used to reduce the barriers to the adoption of existing and future energy efficient technologies.

2. Incentives & Barriers re Innovation and Commercialisation of Energy Efficient Technologies

Prices:

Australia has vast reserves of fossil fuels enabling Australia to create low cost energy supplies based on these fossil fuels. This has acted as a barrier to a desirable level of investment in research, development, commercialisation and adoption of clean energy technologies.

Futureworld recommends that the emissions trading scheme be used to selectively increase the cost of non-renewable energy so as to enable:

- Increased development and adoption of renewable energy technologies,
- Improvement in the efficient use of energy.

We are concerned that, in its current form, the Carbon Pollution Reduction Scheme (CPRS) does not provide an adequate incentive to properly enable these outcomes. Futureworld recommends the following enhancements be made to the scheme:

- That voluntary reductions in emissions by individuals be recognised through the annual retirement of CPRS permits equivalent to the annual voluntary offset. This prevents the perversity of voluntary emissions reductions providing a free ride to industry.
- That Emissions Intense Trade Exposed Industries (EITEI) be required to demonstrate their costs of emissions abatement through the publication of an audited Marginal Abatement Cost Curve (MACC) for each business. This will ensure transparency in free permit allocation negotiations between the government and EITEI entities.
- That not-for-profit environmental organizations (officially registered with the Department of Environment, Water, Heritage and Arts (DEWHA) and the Australian Taxation Office), who provide environmental education awareness programs, particularly to business and the general public, should be able to earn credits for their work under the CPRS.

Employment and adverse impacts on regional centres:

The Illawarra region is, economically, highly dependent on coal mining and steel making. It is inconceivable that these industries will become non-viable under the advent of an emissions trading scheme. Especially so, considering the investment that these industries are already making in clean coal and low emissions steel making.

Any emissions trading scheme must provide the correct balance between providing incentives for the development of more efficient use of energy and greater investment in clean energy technology research and development (R&D). Today's efficiency improvements were yesterday's technology R&D.

Achieving this balance will drive industry towards greater efficiency and innovation - thus an industry will become more competitive on the world stage. In the marked trend to globalisation, failure to encourage efficiency in industry results in loss of competitiveness and ultimately the loss of jobs.

In order to strike the right balance, Futureworld therefore recommends that part of the revenue from an emissions trading scheme be used to provide:

- Timely federal government financial support for clean energy technology R&D, demonstration and commercialisation eg Super Conductors which was located next to Futureworld, was eventually sold and relocated to Texas, USA; Dr David Mills, who developed thermal power at the Uni of Sydney, relocated to the USA; Solar Sailor and Oceanlinx are doing most of their commercialisation internationally all due to lack of adequate start-up support by the Australian government.
- Incentives to encourage state government support for energy related technological innovation eg Futureworld itself attempted to create a regional renewable energy hub but was unable to obtain state government support.
- Incentives to encourage small businesses to participate in overseas trade missions eg at present Austrade opportunities are too expensive for NGOs.

Further to the above, the federal government should investigate a range of complimentary measures similar to the Mandatory Renewable Energy Target (MRET) scheme that supports the development and adoption of clean technologies.

Inspiration for these complimentary measures can be drawn from the range of fiscal incentives that are already known e.g.

- tax incentives to encourage private sector support (by both business and philanthropy);
- subsidies (transparent for the benefit of the public good);
- tax deductibility (preferential taxation, deferred taxation, restrictive arrangements);
- enterprise assistance (technological efficiency);
- dollar for dollar grants;

- removal of perverse incentives such as under-pricing or perverse tax mechanisms;
- income tax deductions or tax credits;
- revolving funds (currently used in relation to energy conservation and native vegetation retention on private lands); and
- industry-based levies.

Domestic Energy Supply and Future Infrastructure Investment:

As discussed previously, a properly designed emissions trading scheme will provide the incentive to improve energy efficiency in all sectors, including the home. It can also be used to drive investment into renewable energy generation.

In order to achieve these ends, Futureworld recommends that part of the revenues from the emissions trading scheme be used to:

- Support a gross feed-in tariff based on spot pricing for domestic renewable energy generators. This provides small distributor generators the same benefits as large generators.
- Support households to become more energy efficient; this can be achieved through direct subsidies such as the current homeowners insulation scheme or Renewable Energy Certificates (RECs) and, indirectly, through support of NGOs who educate the community about renewable energy and energy efficiency.
- Restoration of the federal Energy Research and Development Corporation (ERDC). The ERDC was wound up in March 1997 at the very moment that Futureworld was almost about to receive a \$ for \$ grant from the ERDC that would have ensured Futureworld proceeding with a significant level of onsite technology development and display (thus promoting commercialisation).
- Futureworld believes the re-institution of the ERDC or a similarly focussed organization, would enable Australia to gain a competitive edge internationally by play a key role in promoting innovative renewable energy and energy efficiency R&D.
- Support initiatives such as the proposed University of Wollongong/Murdoch University joint east-coast/west-coast based renewable energy project that was abandoned due to lack of federal government support.

Conclusions

By increasing non-renewable energy prices, an emissions trading scheme can be used to improve the efficiency of energy use in Australia, to drive technology innovation and to increase adoption of clean energy technologies. The scheme must be carefully balanced to ensure that industry is not forced into economically irrational abatement costs. However, enough incentive must be there to create a constant tension thus pulling the next generation of efficient technologies through the development pipeline.

A properly balanced scheme can be expected to preserve employment by encouraging industry to become more efficient in its use of energy and thus more globally competitive. A properly balanced scheme will maintain pressure on efficiency over time thus providing the incentive for Australian industry to be more innovative. Local research, development and commercialisation of these innovations may also lead to more employment in exporting the technologies.

The domestic sector is best assisted to transition to higher energy prices through support for it to become more energy efficient plus supporting the adoption of micro renewable generation. Levels of education and awareness in this sector are low and not-for-profit NGOs, such as Futureworld, are essential to bridging the gap and encouraging efficiency take up by households and small business.

Under an emissions trading scheme, Futureworld expects future investment in energy infrastructure to be biased towards clean technologies. In order to support this transition, there must be appropriate support for R&D through academia and co-ordination at the national level through bodies such as the ERDC.

Futureworld greatly appreciates this opportunity to appear before the Senate Inquiry and welcomes further requests for detailed input into the area of community education and awareness (including business and government entities).

Appendix 1:

Futureworld Constitution *AIMS* (1992):

- 1. To construct and develop the National Centre for Appropriate Technology, in Wollongong, for the purpose of creating public, government and private sector awareness of the need for and availability of environmentally appropriate technologies that will help create a more ecologically sustainable future for Australia.*
- 2. To generate local employment, tourism activity and facilitate technology transfer within Australia and internationally.*



The Marjorie K Solar Sailor on Display at Futureworld developed by Dr Robert Dane from Ulladulla.



The wave power demonstration plant at Port Kembla, developed and tested locally by Tom Dennis at Oceanlinx.



The Sustainable building choices display informs visitors how materials can be reused and recycled in building and construction.



The greenhouse bike on Display at Futureworld demonstrates how much personal energy it takes to light up different types of light globes. .