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7 September 2000

The Committee Secretary  
Inquiry into the Kyoto Protocol  
Joint Standing Committee on Treaties  
Parliament House  
Canberra ACT 2600

Email: [jsct@aph.gov.au](mailto:jsct@aph.gov.au)

Dear Sir/Madam

### **Inquiry into the Kyoto Protocol**

Stanwell Corporation welcomes the opportunity to provide an energy and economic perspective to the Joint Standing Committee on Treaties Inquiry into the Kyoto Protocol. We have prepared the attached submission, which outlines our views on the problems caused by the reforms in the Australian electricity industry and the economic benefits which flow from ratifying the Kyoto Protocol – particularly in respect of the significant growth potential of the renewable energy industry.

Stanwell Corporation is a generator with \$1.7 billion assets, which has undertaken major investments in renewable energy projects, such as wind farms and co-generation projects, which will create considerable wealth and employment in regional Australia. The Windy Hill wind farm, which is situated about five kilometres from Ravenshoe on the Atherton Tablelands, will be Australia's largest wind farm and will showcase renewable energy in Queensland. Stanwell Corporation's co-generation projects will utilise previously untapped biomass resources to produce more environmentally friendly electricity. These co-generation projects will also enhance the commercial viability of the sugar industry through the investment in more efficient plant and equipment.

Stanwell Corporation would welcome the opportunity to discuss its submission with the Joint Standing Committee on Treaties.

Yours sincerely

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**STANWELL**  
CORPORATION LIMITED

A.C.N. 078 848 674

**Submission to the Joint Standing  
Committee on Treaties  
Inquiry into the Kyoto Protocol**

7 September 2000

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## Introduction

The establishment of a cohesive greenhouse management framework, including early action on emissions trading, is necessary to provide certainty for industry investment decisions. Stanwell Corporation believes that greenhouse management measures are instrumental drivers for developing innovative solutions and enhancing Australia's international competitiveness in response to the greenhouse challenge. Stanwell Corporation is committed to supporting the Government's greenhouse initiatives such as the 2% renewable energy target and the Australian Greenhouse Office's excellent work in progressing the emissions trading agenda in Australia.

Stanwell Corporation is a power generation company with total assets in excess of \$1.7 billion that is committed to becoming Australia's foremost provider of environmentally responsible energy solutions. Stanwell Corporation's experience in the electricity business provides us with a unique perspective on electricity industry developments over the last 10 years including the implementation of reform initiatives such as National Competition Policy and the introduction of a National Electricity Market. We observe that the measures contained within the Kyoto Protocol could be considered in a similar light. It is clear to Stanwell Corporation that opportunities for change and improvement should be embraced and grasped with enthusiasm. The imperative for innovation and change cannot be ignored as there will be a heavier price paid for delaying the implementation of reforms, which enhance the long term sustainable growth of Australia's economy.

Stanwell Corporation believes that reforms to the electricity industry have produced unexpected harmful side effects in relation to greenhouse issues including greenhouse emissions. Ratification of the Kyoto Protocol and implementation of greenhouse management measures such as the 2% renewable target and emissions trading will address these problems. In addition, there are major economic, community and environmental benefits associated with introducing greenhouse management initiatives.

Stanwell Corporation welcomes the opportunity to provide an energy and economic perspective to the Joint Standing Committee on Treaties Inquiry into the Kyoto Protocol and has outlined its views on:

- problems caused by the reforms in the Australian electricity industry;
- the economic benefits which flow from ratifying the Kyoto Protocol – particularly in respect of the significant growth potential of the renewable energy industry;
- benefits of renewable energy investments for regional Australia;
- minimal impact of greenhouse management initiatives such as the 2% renewable energy target, and
- emissions trading.

## Inconsistent electricity industry restructuring and environmental objectives

It is difficult to deregulate a power generation market in a manner that encourages the appropriate economic, environmental and reliability outcomes. This is exacerbated by a high level of regulatory uncertainty, which has led to piecemeal and conflicting industry restructuring as well as environmental objectives, which are sometimes at odds with competitive market outcomes. There is, however, no other industry where the concepts of competition and the environment are so thoroughly intertwined.<sup>1</sup>

Deregulation has given rise to the following concerns<sup>2</sup>:

- The introduction of competition will lower the cost of electricity, thus leading to an increase in consumption, with the majority of the increase being satisfied by idle low cost coal-fired plant. Competition policy as implemented in the Australian Electricity

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<sup>1</sup> Cavanagh, R. (1999), "Congress and electric industry restructuring: environmental imperatives", *Electricity Journal*, Vol 12, No. 6, pp 11-20.

<sup>2</sup> Heydlauff, D. (1999), "Electric industry competition and the environment", *Electricity Journal*, Vol 12, No 6, pp 41-49.

Industry has come in the form of the 'gross pool' model. This effectively means that all electricity generated must be traded through the pool in the first instance, thereby maximising allocative efficiency. Offer pricing by generators, in the short run, thus comes down to the short run marginal cost of each installation – and in this context, coal-fired plant tends to be advantaged over its gas-fired or renewable energy competitors. While the average cost function of coal-fired sets may be equivalent to an efficient combined-cycle gas-fired installation, the short run marginal cost is invariably lower due to the abundance of coal resources in Australia. As a result, coal-fired production is likely to dominate the physical market.<sup>3</sup>

- The introduction of competition will eliminate resource planning by utilities, which will in turn reduce the incentives for utilities to pursue energy efficiency programs and demand-side management initiatives. Evidence from the United States appears to provide support for the concern that competition and deregulation will reduce the incentives for utilities to pursue demand side management and energy efficiency programs.<sup>4</sup>

The introduction of competition will reduce market share for cleaner, renewable power, which will not be able to compete with traditional fuels when (an externality free) market price is the determining factor for sales. The phenomenally low-cost of coal in Australia, especially in comparison to European countries, has meant that without pricing externalities, renewable power generators will find it very difficult to enter the market profitably.<sup>5</sup>

There is a clear need for the Australian Government to assume a leadership role in addressing these problems. Stanwell Corporation therefore believes that ratification of the Kyoto Protocol and implementation of greenhouse management measures such as the 2% renewable energy target and emissions trading will address the above problems. This would provide the framework for a comprehensive range of greenhouse management measures to provide appropriate:

- price signals to reflect the full cost of fossil fuelled energy – including the cost of pollution;
- investment signals; and
- network pricing arrangements.

These issues are discussed below.

## Need for appropriate price signals to reflect the full cost of fossil fuelled energy

Renewable energy projects generally face a significant commercial disadvantage by virtue of their higher energy production cost in relation to conventional fossil-fueled generators.<sup>6</sup>

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<sup>3</sup> Note that this may not be the case in the hedge market. In gross pool electricity markets, hedge contracts are literally financial instruments - of notional volumes (MW), settled against the reference spot price (\$/MWh). The hedge contracts are *not* physical supply contracts. Thus, a generator may be a significant seller of 'electricity swap contracts', and produce very little power, utilising their plant as a virtual call option against periods of high spot electricity prices.

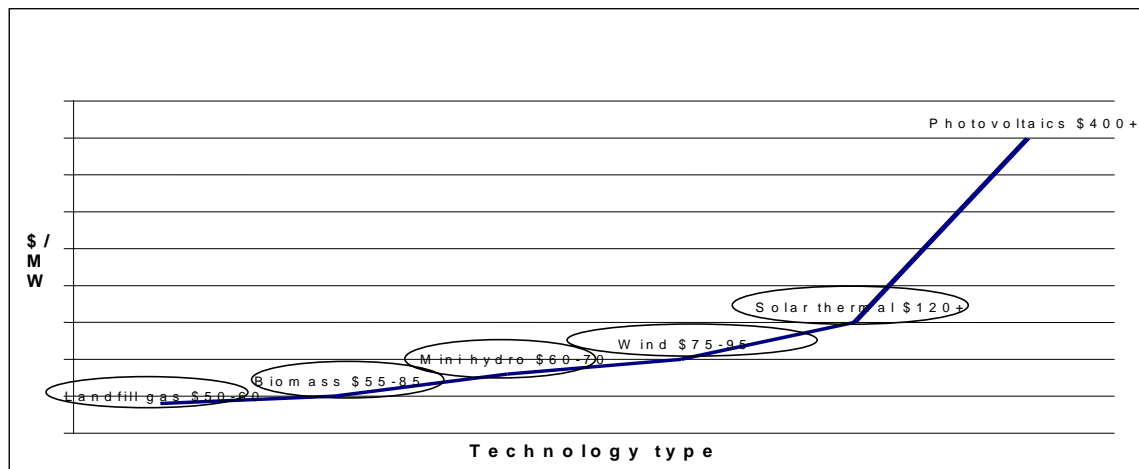
<sup>4</sup> Cavanagh, R. (1999), "Congress and electric industry restructuring: environmental imperatives", *Electricity Journal*, Vol 12, No. 6, pp 11-20.

<sup>5</sup> Ted Scott and Paul Simshauser, Green energy: The uncertainties associated with a renewable energy strategy, Stanwell Corporation Discussion Paper, April 1999.

<sup>6</sup> Allen Consulting Group and McLennan Magasanik Associates Pty Ltd, Energy Market Reforms and Greenhouse Gas Emissions Reductions, A Consultancy Report to the Department of Industry, Science and Resources, Melbourne, March 1999, page x to xi.

The typical cost of electricity produced by the various renewable energy technologies is illustrated by Figure 1:

Figure 1: Long run marginal costs of renewable energy technologies



The price advantage that fossil-fueled electricity generation currently enjoys comes about because the cost of fossil-fueled generation does not reflect the full cost to the environment and community. The avoided external costs include:

- use of oxygen from the atmosphere is a principal avoided cost, which has been treated as a free good but is in fact a resource of value;
- pollution associated with general air pollution, acidification of the environment and greenhouse gas emissions;
- other hazards associated with extracting, storing, transporting and processing fossil fuels; and
- cost of supporting infrastructure such as rail, roads and water.

In addition, incumbent fossil-fuelled generators enjoy a significant operating cost advantage as the existing network pricing framework favours incumbent generators and poses as a serious obstacle to the commercial viability of renewable energy projects.

In the short to medium term (between now and 2005), greenhouse gas emissions are expected to rise because:

- lower electricity prices flowing from the energy market reform will increase greenhouse gas emissions associated with higher demand for electricity; and
- an increase in market share achieved by expansion in output of the lowest cost producers of electricity, namely the 'brown coal' electricity generators in Victoria. Imports of brown coal generation have displaced black coal generation in New South Wales and gas fired generation in South Australia.<sup>7</sup>

## Distorted investment signals

The lack of penetration of renewable energy in the electricity market may be attributed to the fact that conventional generation from fossil fuels currently enjoys a considerable cost advantage compared with renewable energy for the reasons outlined above.

This is a result of inappropriate investment signals in favour of generation sourced from fossil fuels. This is evidenced by the well publicised new Queensland coal fired power station projects with a total generation capacity of over 2,800 MW, which will significantly increase the current total installed capacity of 8,106 MW in Queensland. The three

<sup>7</sup> Allen Consulting Group and McLennan Magasanik Associates Pty Ltd, Energy Market Reforms and Greenhouse Gas Emissions Reductions, A Consultancy Report to the Department of Industry, Science and Resources, Melbourne, March 1999, page xii to xiii.

committed coal-fired power projects are the 840MW Callide 'C' project, the 840MW Millmerran project and the 450MW Tarong North project. There are other proposed coal fired generation projects, although the expected commissioning dates remain less clear.

There are the following disturbing implications of the plans for new coal fired generators:

- The additional coal fired generation is directly at odds with greenhouse gas abatement policy as it translates to approximately 12.4 million tonnes per annum of greenhouse gas emissions.<sup>8</sup> This will virtually eliminate Queensland's greenhouse gas gains from abatement measures and seriously jeopardise Queensland's ability to meet its greenhouse gas emissions reduction obligations. These projects will ultimately increase the overall cost of greenhouse abatement for all Australians.
- The new coal fired generation plants will potentially create an oversupply in the electricity market. This means that the market for renewable energy can only grow by displacing conventional generation. This may restrict the market share of renewable energy where rises in demand can be met from existing over capacity.
- The current plethora of coal fired power station proposals appear to be motivated by a window of opportunity before the deficiencies in the National Electricity Code are tightened and other greenhouse abatement measures are introduced. The current proposals may escape the full cost of:
  - network augmentation;
  - compliance with minimum efficiency standards for generation;
  - carbon emissions (if an emissions trading system is introduced with grandfathering provisions); and
  - other government funded infrastructure support such as water, road and rail.

This situation is neither sustainable nor in Australia's best interest. While energy sourced from fossil fuel currently enjoys a considerable cost advantage compared with renewable energy, this could change significantly with the introduction of emission permits and trading. In addition, fossil fuels are a finite resource, whilst renewable energy production is sustainable and therefore, should play an increasingly important role in energy production.

### Inappropriate network pricing framework

In developing a transmission and distribution pricing framework, the National Electricity Code Administrator was keen to ensure that the transmission and distribution pricing system provides signals to facilitate appropriate locational decisions. Renewable energy projects tend to be distributed through the network and as such have the potential to enhance electricity network reliability and security as well as improving services to rural Australia. However, renewable energy faces the following hurdles:

- High network charges pose a serious impediment to the commercial viability of renewable energy projects. A study commissioned by the Australian Greenhouse Office found that renewable energy faces difficulties of the network connection and pricing arrangements, which have not been designed with such generation in mind.<sup>9</sup>

The OECD also supports this view. The OECD found that there are different types of impediments to the deployment of renewable energy technologies in the market place. In the initial stages of development, technical impediments usually dominate. Later, as advances in technology improves the cost effectiveness of the new technology, there are market impediments such as:

<sup>8</sup> Paul Simshauser and George Docwra, Long run efficiency in deregulated electricity markets: A partial dynamic equilibrium analysis of negative externalities, Stanwell Corporation Limited Discussion Paper No. 38, April 2000.

<sup>9</sup> Redding Energy Management and RMIT Energy and Environmental Management Group, 2% Renewables Target in Power Supplies – Potential for Australian Capacity to Expand to Meet the Target, January 1999, Commissioned by the Australian Greenhouse Office, Page 133-134. Allen Consulting Group and McLennan Magasanik Associates Pty Ltd, Energy Market Reforms and Greenhouse Gas Emissions Reductions, A Consultancy Report to the Department of Industry, Science and Resources, Melbourne, March 1999, page x to xi.

- inappropriate network connection and usage pricing structures. Under current network pricing structures, transmission and connection costs for renewable energy projects are higher than conventional coal fired generators; and
- unequal playing field as the current cost of non-renewable sources of energy do not reflect the full environment and community cost, which would be addressed through the introduction of carbon taxes and/or emissions trading.<sup>10</sup>
- Renewable energy projects involve significant upfront capital investments<sup>11</sup> but technological advances will in time improve their commercial returns. Until the renewable energy industry matures, the adoption of a short-term perspective by network service providers will result in unfavourable network charges, which will distort renewable energy investment decisions. In the future, renewable energy projects will play a more significant role in the production of electricity, resulting in a more decentralised electricity network. Network service providers should take a longer-term perspective and facilitate the increased penetration of renewable energy as this is in the long-term best interest of their customers. It is common in commercial arrangements for suppliers to adopt a long-term perspective by recognising and charging the market price that a customer can bear. It should be understood that new entrants might increase network utilisation, which should be to the advantage of the network service provider.
- There is lower risk of stranded network assets with the development of renewable energy projects. The future of these facilities is not dependent on external factors such as fuel supply risks and the introduction of pollution permits and taxes, which may render some coal-fired power stations uncommercial and unviable in the future. The lower risk associated with renewable energy projects should be reflected in the applicable network charges.

## **Growth of the renewable energy industry**

Stanwell Corporation believes that there are significant commercial opportunities for renewable energy in Australia. The renewable energy sector has grown several fold in recent years and the Government's 2% renewable energy target will play a vital role in the sustained growth of the renewable energy sector.

The NSW Government estimated that the total economic impact of the renewable energy industry was worth between \$2.2 and \$3.3 billion to the NSW economy in 1998 and was expected to increase to \$4.9 billion in 1999.<sup>12</sup> Demand for energy efficiency, renewable products and services was growing at a rate of more than 25%, which outstripped both IT sales and tourism. This was a significant finding as the IT and tourism sectors were typically associated with high growth. The NSW renewable sector is estimated to directly employ 4,700 people and indirectly support up to 13,200 NSW jobs.

In a recent report from the US, Harriet Babbitt, acting administrator of the U.S. Agency for International Development said the world market for energy efficient technologies has been estimated at almost US\$1.8 trillion over the next 40 years.

The Prime Minister's Science, Engineering and Innovation Council found that there is an opportunity to stimulate new intellectual based industries in the science, engineering and innovation related fields, which has considerable export potential. In the renewable energy sector alone, the new market opportunities in Australia are estimated to be in the

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<sup>10</sup> Organisation for Economic Co-operation and Development, Penetration of Renewable Energy in the Electricity Sector (Annex 1 Expert Group on the United Nations Framework Convention on Climate Change Working Paper No. 15), August 1998, page 7.

<sup>11</sup> Allen Consulting Group and McLennan Magasanik Associates Pty Ltd, Energy Market Reforms and Greenhouse Gas Emissions Reductions, A Consultancy Report to the Department of Industry, Science and Resources, Melbourne, March 1999, pages x to xi.

<sup>12</sup> Sustainable Energy Development Authority of NSW, Media Release "NSW Green Energy Growth Outstrips IT and Tourism", 16 July 1999.



range of \$2 to \$4 billion over the period to 2010.<sup>13</sup> The Australian market for abatement of greenhouse gas emissions is estimated at US\$7 billion and expected to grow at 4.1% annually.<sup>14</sup>

The Australian renewable energy sector has the potential to generate export income, provide a significant economic stimulus to rural Australia and create employment opportunities.<sup>15</sup> Australia is well placed in the Asia Pacific region to compete with other potential suppliers, and the export opportunities have been recognised by renewable energy industry participants. For example, Alstom Power has established its engineering centre of excellence for biomass generation design in Australia, which will see Australia export the intellectual expertise and hardware to meet the growing international demand for renewable energy. Furthermore, Enviro Power (corporate partners are Century Yuasa, Canon, NDC, Kyocera, SunPower Solartech, Westwind Turbines, Tamar Designs and Kubota) expects to invest \$50 million in a new solar photovoltaic panel, battery and associated electronics manufacturing facilities in Australia.

## **Benefits of renewable energy for regional Australia**

Stanwell Corporation believes that renewable energy generation has a range of benefits, which include:

- Enhanced electricity supply in regional Australia - system reliability and security could be improved as renewable energy projects tend to be:
  - embedded in the electricity network; and
  - located in regional Australia.
- Reduced demands on Government budgets and Community Service Obligations from:
  - reduced transmission and distribution costs and energy losses; and
  - deferral or elimination of investment in transmission and distribution network infrastructure.
- Australia is able to diversify its energy fuel sources, which reduces the risk of dependence on fossil fuels in the event that the Kyoto emission targets become binding.
- Greater flexibility and responsiveness to meet Australia's growing energy demands – green projects are generally smaller and have shorter lead times, which would better service the growth in demand for energy on an incremental basis.
- Regional development opportunities – Rural Australia will be a major beneficiary of green projects because renewable energy resources are generally located in rural Australia. Stanwell Corporation has undertaken major investments in renewable energy projects, such as co-generation and wind projects, which have created considerable wealth and employment opportunities in regional Australia.

Stanwell Corporation's cogeneration projects enhance the commercial attractiveness of cogeneration hosts and associated industry and contribute towards research into the development of environmentally responsible and sustainable farming practices by:

- creating a market for biomass material that was previously regarded as waste material, which in some cases was a cost associated with disposing of the material;
- incorporating new technology in the redesign of plant and equipment which will improve efficiency and profitability of cogeneration hosts;

<sup>13</sup> Prime Minister's Science, Engineering and Innovation Council, From Defence to Attack: Australia's Response to the Greenhouse Effect, 25 June 1999, page 4.

<sup>14</sup> US Industry and Trade Outlook '99, (McGraw Hill Co and the US Department of Commerce, Washington DC) 1999, as quoted in a paper 'Growth opportunities from environmental management' by J.B. Quinn and J.F. Quinn presented to the 1999 Forum on Sustainable Development, 27 May 1999, Canberra.

<sup>15</sup> J.B. Quinn and J.F. Quinn, 'Growth opportunities from environmental management', Paper by presented to the 1999 Forum on Sustainable Development, 27 May 1999, Canberra.

- formulating improved harvesting practices and supporting infrastructure to maximise the biomass available for energy production; and
- developing new varieties of crops to meet the objectives of both the host industry and energy production.

The economic benefits associated with Stanwell Corporation's Windy Hill wind farm to the Ravenshoe region include:

- additional sources of revenue to farmers which provide the scope for farmers to re-invest within the region;
- the establishment of a new major tourist drawcard, which will enhance the critical mass of tourist attractions in the region. International experience shows that there is considerable visitor interest in wind farms;
- major injection of economic and investment activity during the construction phase of the wind farm and supporting network infrastructure; and
- employment creation for the on-going support and maintenance of the wind farms.

## **Economic impact of greenhouse management initiatives such as the 2% renewable energy target**

Stanwell Corporation supports the Government's greenhouse management measures such as the 2% renewable energy target. The legislation to introduce the 2% renewable energy target, namely the Renewable Energy (Electricity) Bill 2000 and Renewable Energy (Electricity) (Charge) Bill 2000, is currently being considered by the Senate Environment, Communications, Information Technology and the Arts Reference Committee.

Stanwell Corporation believes that achievement of the measure's objective could be enhanced by increasing the penalty for non-compliance, to ensure that liable parties would support the renewable energy sector rather than taking the possible lower cost option of paying the currently proposed \$40/MWh penalty. The Australian Greenhouse Office (AGO) opinion is that the penalty for non-compliance should be in excess of \$100/MWh to ensure that the 2% renewable energy target is successfully implemented. Stanwell Corporation considers that the penalty should be in the order of \$65/MWh, indexed to CPI and not deductible for tax purposes.

## **Emissions trading**

Emissions trading will address the inequities in the current operating environment for the energy generation sector. Stanwell Corporation believes that coverage of emissions trading should extend beyond energy intensive companies and combustion related emission sources to:

- ensure that the burden of meeting Australia's environmental responsibilities is shared equitably; and
- minimise compliance cost.

Stanwell Corporation supports:

- the Government's commitment to reward early action undertaken by industry to reduce greenhouse gas emissions; and
- early introduction of an emissions trading system.

Stanwell Corporation considers that a cap and trade approach should be adopted as it is most likely to:

- be consistent with an international emissions trading scheme under the Kyoto Protocol; and

- facilitate structural adjustment.

Permits should be allocated through a combination of grandfathering and auctioning. This approach would provide businesses with maximum possible commercial certainty in terms of price and availability. In allocating permits, the Government should ensure that:

- emissions (and savings) are not double counted or attributed to more than one emitter;
- when Australia enters the first commitment period, the sum of baseline emissions is consistent with Australia's national allocation of Assigned Amount Units;
- the proportion grandfathered should fall away over time to enable new technologies to gain access to permits on the open market, and prevent technology lockouts;
- the allocation methodology is premised on the basis of a concept of equity that gives industry time to adjust to the change in costs and business opportunities associated with a pricing regime for greenhouse gas emissions and maintain international competitiveness; and
- permits should be allocated based on best practice standards for all existing emitters, having regard for advances in technology, which produce emission reductions.

## **Conclusions**

Stanwell Corporation believes that Government support for the Kyoto Protocol is essential to achieve the following objectives:

- ensuring that Australia's economy continues to grow on a sustainable and environmentally responsible basis;
- meeting Australia's international environmental obligations;
- providing opportunities for regional development; and
- creating export opportunities for renewable energy equipment and intellectual property.