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Ref: 6019  
Date: 9/3/2008

The Secretariat,  
Garnaut Climate Change Review,  
Level 2, 1 Treasury Place,  
Melbourne Victoria 3000

I wish to submit comments on three areas of your report:

1. The possible impacts of climate change on Australia's economy and environment;
2. The potential benefits and costs of a range of international and domestic mitigation efforts;
3. Adapting to Climate change.

## **1. The possible impacts of climate change on Australia's economy and environment.**

### **1.1. Export Parity Pricing for black coal.**

I am concerned that to date there has been no discussion of the export parity pricing issue for Black Coal power generators.

This issue was raised in the very early days of the AGO when they were active in the public forum debate, but apparently the AGO dropped the issue following high level political direction. This issue is very important in the total greenhouse gas debate because it distorts the pricing in the east coast power pool and thus acts against the widespread introduction of proven baseload renewable technology.

Various published reports over the last few years have indicated that the average price of black coal, provided on long term contracts to NSW power stations is between \$A12 and \$A 20 per tonne.

Recently the export price for steaming coal FOB Newcastle was \$US 102 per tonne. This coal would be used for power generation in Taiwan, Japan, Korea and more recently China. Landed cost of this coal in Korea is now in the region of \$US 125 per tonne.

If you look at the recently published ABARE Figures, Black coal was used to provide 141 TWH of electricity in 2006 and used 1636 PJ of coal to make this power. At 43,000 tonnes of black coal to the PJ this equates to 70.3 million tonnes of coal that very clearly could have generated in the region of \$A 7.9 billion in export income.

There are however, some black coal power stations that are using low quality, low energy density coal that is a by-product from the mining of export quality steaming coal but the use of this coal has its own set of extra emission and ash disposal issues.

If you take a conservative view of the loading and transport fees to the Newcastle coal loader, then it would not be unreasonable to say that this loss of export income was in the region of \$A 30 per MWh sent out.

Countries like Japan, Korea and Taiwan factor the cost of this coal into their electricity prices and it is somewhat surprising that this issue has not made it onto the WTO agenda as it is clearly a subsidy for local manufacturers that are energy dependent.

If you generate electricity in Australia from Gas, Oil, Diesel or Naptha then you pay export parity pricing, but for some reason this rule does not apply to the black coal sector.

## 1.2 Cumulative Effects.

At the moment the AGO-devised figures for emission factors for power generation take into account the GHG emissions from the act of burning the fuel and do not account for the full cumulative effects of the process that delivers the fuel to the power station. Black Coal supporters argue that these other GHG impacts are picked up in other parts of the inventory which is correct to some extent but leads to a distortion in the GHG impact of these generation plants.

The greenhouse gas emissions should be calculated on the total impact basis of a particular generation site which includes all emissions associated with mining, crushing, washing, cooling water pumping and evaporation, transport and the long term impacts of mine rehabilitation, water use, waste and ash disposal, embodied emissions in imported plant and equipment, consumables, and network losses. The basic test for these additional emissions would be "would this activity take place in the absence of the power station".

Despite the hundreds of millions of dollars consumed by the AGO since its inception, there has never been a proper cumulative effects study that looks at the actual impact of a range of renewable technologies across the Australian landscape. There was some effort to look at this in the LETDF process but this good work was negated because a number of proven ready to implement baseload renewable project were not supported because of the high level political push to foster geo-sequestration at all costs.

One of the major growth sectors in renewables in Europe has been anaerobic digestion. The modern 4<sup>th</sup> and 5<sup>th</sup> generation plants are now installed right down to farm level. A major fifth generation plant has been permitted at Dandenong in Victoria for over two years and failed to attract LETDF funding despite being highly recommended to the panel by the Department. The Dandenong plant would take 250,000 tonnes per year of greenwaste, food waste and dead animals - product that currently goes to landfill- and would produced 6Mw of sent out baseload, about 18,000 TPA of high quality granulated organic fertiliser and a megalitre of water per week. LETDF funding was required to take the project risk out of the first plant and analysis indicated that this type of technology could deliver at a minimum, at least 2000 Mw of baseload around Australia. In Germany and Switzerland, some of the gas produced by these plants is used as vehicle fuel and there is no reason to believe that this could not be the case right across Australia and right down to farm level. It is interesting to note that most modern diesel engines can burn up to 70% biogas without major conversion.

A full cumulative effects study of the currently proven renewables technologies would deliver a good picture of the flow down effects of wide scale implementation. When all the cumulative effects are taken into account the reductions that are available to the national emissions baseline are quite significant but various vested interest groups do not want this sort of work to be carried out for very obvious reasons.

It is my opinion that a 50% reduction of national greenhouse gas emissions can be achieved by 2020 using currently available technologies. Some careful planning could deliver a 70% reduction by 2030.

## 2. The potential benefits and costs of a range of international and domestic mitigation efforts.

There has been much comment recently in relation to the difficulty of getting the developing countries in our north to sign on to emission reduction targets. Article 6 of the Kyoto protocol allows parties that are signatories to the protocol to move parts of their emission baselines between themselves.

In the late 1990, a major Japanese steel producer in co-operation with the Japanese Government, looked at the option of moving all its steel production facilities to North West Western Australia and building what was then called the Capricorn Railway to transport coal to western Australia from Queensland and to take the steel back to Rockhampton for transport by sea to Japan. Japan would have transferred to Australia sufficient emission credits to make this process emission neutral to Australia and would have still delivered significant baseline emission reductions in Japan along with significant air quality improvements.

There was significant political pressure applied by interests associated with the coal industry who saw this as a development that would limit their ability to negotiate price rises from a diverse customer base. In the end the proposal died due to lack of interest by certain senior Australian diplomats and bureaucrats.

Recently there has been further work done on a similar proposal that would see the bulk of the north Asian steel making capacity transferred to Australia in order to maximise the emission reductions and air

quality improvements that would be involved in the production of steel in state of the art plants. This work has been carried out without Australian input due to the sensitive nature of the proposal and the range of conflicting interests involved.

The AGO and ABARE have never done any work on this issue to define the actual benefits for all of Asia that could evolve from this massive relocation of emission intensive industries. This research should be carried out as a priority but by one of the universities to avoid the inherent conflicts that could arise with ABARE's and the AGO's prior avoidance of this logical development.

The take home message from this development is that large scale emission reductions in Asia may well be easier than the current crop of greenhouse diplomats and bureaucrats maintain.

### **3. Adapting to Climate Change.**

The recent extended drought over southern Australia is seen in some circles as a forewarning of things to come from the rapid environmental changes driven by climate change. There has however, been no open discussion about the inter-relationship between climate change and man made changes to the physical landscape environment in Southern Australia.

At one stage in the late 1990's, the AGO was looking at a project to create a pre-habitation surface Albedo model of Southern Australia. This model was required for a number of reasons including providing data to model land use change and as a spin off of this work the data could have been used to calculate the thermal effects of land use change. It is well understood within the environmental disaster management community that the changes to the surface Albedo of Southern Australia may well be a major contributor to the extended droughts over southern Australia.

In simple terms, the facts are that large scale land clearing over all of Southern Australia has changed the way the prevailing westerly winds distribute moisture. For instance, since the First World War, huge areas of South Western Australia have been cleared and this clearing has changed the surface Albedo from 10-15% out to an average of 25% to 35%. This means that the area does not heat up as much during the winter and therefore does not drag in as much moisture laden air from the southern ocean. There is the same impact in the summer.

It is this moisture laden air that provides the moisture that comes to earth across the whole of Southern Australia. When you consider that the Eyre Peninsular, York Peninsular, the Mallee/Wimmera, Western Victoria and most of the Murray Darling catchment have been fully or partially cleared it is not hard to understand that what is happening may well be a combination of climate change and long term human induced changes to massive ecosystems.

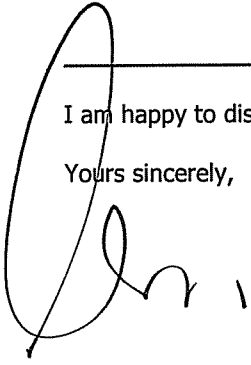
There is a further complication with the construction of large dams at altitude across the south eastern corner of Australia. These dams hold warm water in the winter and cold water in the summer and rely for their inflow on rainfall that is in part generated by the south and westerly dominated weather patterns. There is a view that these dams may have impacted some of the east Australian coastal currents thus adding a further layer of complexity that may not be directly attributable to climate change.

For instance, if you look at the rainfall records for the township of Noojee in West Gippsland Victoria you will notice that the annual rainfall for this area dropped significantly following the filling of the nearby Thompson dam. It is also important to note that the diversion of the Snowy River into the Murray Darling Basin has fundamentally altered the rainfall patterns in East Gippsland and has probably seriously impacted the east Australian current that flows past the Snowy River mouth.

My take home message on all this is that many of these impacts are reversible and as part of a suite of responses to climate change this work should be carried out. The Albedo issue across Southern Australia is probably a zero sum game over the long term - replanting 30% of cleared land would probably increase primary production on the rest of the land by reducing salinity and sheltering the land from the effects of wind which in turn reduces evaporation and soil loss. This type of long term forestry would aid in the sequestration of carbon and thus may be able to generate at some point in the future emission credits. More trees means more evapotranspiration which would increase humidity and would, in time assist in dragging more moisture laden air in from the southern ocean.

I am happy to discuss these issues in more detail should the Review see some merit in my comments.

Yours sincerely,



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