Submission 082
Received 28/05/2012

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28th May, 2012

Committee Secretary
House of Representatives Standing Committee on
Climate Change, Environment and the Arts
PO Box 6021
Parliament House
CANBERRA ACT 2600
AUSTRALIA

Dear Committee Secretary,

Enclosed is a copy of our submission to the Inquiry pertaining to 'Australia's biodiversity in a changing climate'. This submission has been prepared in response to two terms of reference, *connectivity between ecosystems and across landscapes that may contribute to biodiversity conservation*, and *how climate change impacts on biodiversity may flow on to affect human communities and the economy*.

The recommendations produced in this submission are the result of combining our extensive experience and knowledge in the broad area of the environment with secondary evidence relevant to this issue to support our claims. We hope that because of this our thoughts and opinions may be regarded when creating environmental public policy so that the best legislation is used to support Australia's biodiversity in a changing climate.

If you have any questions or comments in regards to our submission, please contact us at the above number or email.

Sincerely,

Leah Henkel
Amanda Astri
Sophie Ruddell
Emily Leary, *on behalf of:*
The Tom Farrell Institute for the Environment
(Authorised by Director Tim Roberts)

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House of Representatives Standing Committee on Climate Change, Environment and the Arts Inquiry

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Australia's biodiversity in a changing climate

Submission

Prepared by Leah Henkel, Amanda Astri, Sophie Ruddell and Emily Leary, *on behalf of:*
The Tom Farrell Institute for the Environment

28.05.2012

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1.0 Introduction

As an environmental organisation whose mission is to *develop regional solutions for a sustainable future*, we understand the importance of safeguarding Australia's unique biodiversity. It is difficult to maintain this biodiversity in the face of climate change, especially when Australia's economy heavily relies on practices that permanently change our landscape such as agriculture and mining (Godden, Nelson, & Peel, 2006).

Two projects we are involved in that will assist in the formulation of our recommendations are the Wildlife Corridor Plan and the 'Diamonds From Coal' Initiative. These both are associated with the two terms of reference we will cover, which deal with the connectivity between ecosystems and how climate change affects human communities and the economy. The 'Diamonds From Coal' Initiative utilises the coal export industry to help combat climate change, a major player in sustaining the Hunter's economic viability through the movement of 114.1 million tonnes of coal in Newcastle Harbour in 2011 (Newcastle Port Corporation, 2012). It is now having input into maintaining rather than destroying biodiversity through testing energy alternatives.

The Wildlife Corridor Plan deals with the Great Eastern Ranges, a nationally important ecosystem in maintaining Australia's biodiversity, through sustaining agriculture, tourism and industry, as well as providing a source of clean water (Great Eastern Ranges, 2012). With the effects of climate change endangering this ecosystem, Australia's biodiversity and economy will be at risk, prompting action to be taken now.

2.0 Background

In recent years, there has been an increase in awareness and attention to climate change and the effects it is having on Australia's environment. Science suggests that it will significantly impact our natural, social and economic systems. Scientists predict weather changes where temperatures and summer rainfall will increase and winter rainfall decrease. Sea levels are also predicted to rise, which will cause more flooding and sea erosion. Natural hazards are also expected to change in form, frequency and force, such as increases in heat waves and heavy periods of rainfall. These increases in temperature, weather events, fire and erosion have the potential to drastically affect, if not destroy, ecosystems in Australia (NSW Government, 2011).

Climate change is affecting Australia's biodiversity. Our biodiversity is suffering from habitat degradation, changed fire regimes and invasive species. Plant and animal species will continue to struggle for survival, and some are potentially facing extinction. Considering that 85 percent of Australia's terrestrial mammals, 91 percent of flowering plants, and 90 percent of reptiles and frogs exist only in Australia, action needs to be taken now (Australian Government, 2011).

Australia and other nations around the world have begun to implement strategies, the carbon tax beginning in July 2012 being Australia's most prominent strategy. Other ways the Australian government has committed to tackling climate change include the development of 'clean' initiatives and strategies, signing the Kyoto Protocol, and constantly researching the best, most effective ways of adapting to climate change (Australian Government, 2011).

3.0 Terms of Reference

3.1 Connectivity between ecosystems and across landscapes that may contribute to biodiversity conservation

Wildlife Corridor Plan

TFI strongly believes in introducing strategies that increase connectivity between ecosystems across landscapes. Australia is home to an estimated 10 percent of the whole world's species. Protected areas need to be connected with other threatened and ecologically valuable areas to improve conservation. In our changing climate, measures need to be taken to preserve species and their migrating and dispersal patterns (National Wildlife Corridors Plan Advisory Group, 2012). By improving the wildlife value of infrastructure, gardens, open spaces, canals, unused railway lines and road verge, greater connectivity and biodiversity conservation can be achieved (Douglas & Sadler, 2011). TFI's main project which aims to do this involves the development of green corridors for wildlife movement as stepping stones for the Great Eastern Ranges Initiative.

TFI believes wildlife corridors are extremely effective in protecting biodiversity. Wildlife corridors are areas of land that have certain vegetation planted there which allow species to disperse across large areas. Wildlife corridors improve biodiversity conservation by:

- Protecting species and maintaining and opening up new ways for them to move and adapt in a changing climate. For example, fauna are able to move around more freely, connect to other populations of their species, access food and water, and avoid destructive or inclement events or periods
- Allowing species to move from highly-populated areas to under-populated areas

- Creating a wider range of breeding partners which minimises inbreeding and losses in genetic diversity
- Creating healthier, naturally connected landscapes and ecosystems
- Minimising climate change effects
- Storing and protecting natural sources of carbon in the environment (National Wildlife Corridors Plan Advisory Group, 2012); (NSW Department of Conservation and Environment, 2004); (Urban Ecology Australia, 2006).

Wildlife corridors therefore connect ecosystems and enhance their survival. They allow species to access resources such as water and food that they may normally not be able to access. Research conducted in California showed that areas of habitat connected through wildlife corridors grew approximately 20 percent more plant species than isolated areas would have grown. Other wildlife corridors have improved plant species diversity and seed dispersal and pollination (Roach, 2006).

Wildlife corridors can operate in areas under construction. For example, as part of the redevelopment of the Hunter Expressway, mountains are being left undisturbed and bridges spanning between ridge tops are being built instead of levelling hills and filling valleys to construct a low level highway that results in a physical block to wildlife movement. This significantly helps to conserve the wildlife present, and will be extremely beneficial in the building of wildlife corridors in the area.

‘Diamonds From Coal’ Initiative

The ‘Diamonds From Coal’ concept seeks to receive support through a partnership from the export coal sector to use their land as a test bed for clean technology products and services.

They will also be utilised as an incubator for land use innovation which will lead to providing new land use options for the Hunter and beyond, thereby increasing the biodiversity of the land. These mined and buffer lands will illustrate innovative land uses through new carbon sensitive farming practices to help build a sustainable environmental as well as economic system. Using sustainable practices helps to extend the longevity of Australia's biodiversity as well as achieving a positive outcome for the relationship between environmental initiatives and industry. Developing this sector to align with sustainability and combating climate change is a much more beneficial system rather than viewing it as a competing factor in the introduction of climate change initiatives.

When maintaining diversity, it is important that steps are included for lands that have already been heavily modified due to human activity (CSIRO, 2010). TFI believes that this initiative acts as a step to regenerate and maintain the region's biodiversity through sufficient planning that includes and surrounds the heavily modified land that the coal industry owns. It will also be achieved through testing alternative energy sources like biofuels and electric vehicles in a region like the Hunter that needs to offset its operations to maintain connectivity. This is very important in regards to the mining industry as it plays a major role in climate concerns with high levels of carbon emissions. By utilising its large funds and capabilities, important changes can be instigated.

Through utilising the coal export sector to test out various biofuels that currently in production, it will help the rest of Australia and the world in receiving valuable knowledge about alternative practices. The National Biodiesel Board (2012) in the United States indicates that biodiesel is a sufficient alternative in reducing carbon levels and meeting

exposure limits, assisting in the overall health of workers in this industry, which will be expanded on in the second term of reference.

This knowledge will help markedly within an industry that contributes large amounts to our overall carbon footprint, as outlined by the new Carbon Tax. This scheme will affect coal mining practices who release methane and carbon dioxide into the atmosphere through diesel generators and the like (Corrs, 2011). Clean Energy Future (2012) states that this carbon price effectively encourages this development and investment into renewable energy like biofuels. Through this as well as encouraging the use of electric vehicles and other alternative energy sources, it will not only benefit and help secure Australia's biodiversity, but it will assist an industry that the Hunter and other regions heavily rely on.

TOR Connectivity between ecosystems and across landscapes that may contribute to biodiversity conservation

Recommendation 1 – Wildlife Corridor Plan

TFI recommends that State governments work together to develop and implement wildlife corridor plans. We also recommend that at a Federal level there is more development and implementation of wildlife corridors, as they are effective in protecting species and allowing them to adapt in a changing climate.

TOR: Connectivity between ecosystems and across landscapes that may contribute to biodiversity conservation

Recommendation 2 – 'Diamonds From Coal' Initiative

TFI recommends that government assists with planning, management and research into alternative sources of energy. We also recommend that it understands the need for support as well as requiring investment from the coal export sector to stop the degradation of our biodiversity and ensuring that ecosystems function to support future human economies not dependent on coal or oil.

3.2 How climate change impacts on biodiversity may flow on to affect human communities and the economy

Wildlife Corridor Plan

Climate change has had a significant impact on biodiversity in Australia, and is why sufficient planning is needed. As explained above, the Wildlife Corridor Plan is attempting to maintain species and their habitat which directly affect human communities and the economy. Through charitable teamwork of existing communities, landholders, governments and industry, the economic impact of initiatives outlined in this plan will greatly reduce the loss of biodiversity and assist in maintaining it, compared to the costs in re-establishing completely damaged habitats.

There is an obvious connection between habitat conservation and human communities that is illustrated in this plan. The Department of Climate Change and Energy Efficiency (2011) has stated that our changing climate will reduce biodiversity in Australia where changing rainfall patterns and increased frequency of extreme weather events will impact on water supply, agriculture and urban environments. The wellbeing of Australia's unique native species, ecosystems and human population will be greatly affected if plans such as this are not implemented on a national scale. Supporting cooperative, voluntary endeavours of land managers of variously zoned areas will help restore connectivity and reduce the impacts of climate change on our biodiversity.

Through providing alternative pathways for species movement, landscapes will be sufficiently prepared for climate change. This plan suggests that naturally connected landscapes can store carbon more effectively than those that are degraded, helping mitigate the effects of climate change. Already climate change initiatives are a costly endeavour, so by

supporting plans that help the environment help itself means that this cost is not forwarded on to the wider community, endangering the livelihoods of future generations.

To properly gauge the significance of this plan, there are some parts of Australia where "over 50 per cent of mammal species have been lost and more than 20 per cent of Australia's flora and fauna are currently classified as threatened" (National Wildlife Corridors Plan Advisory Group, 2012, p. 3). This has led to a reduction in the capacity of the environment to function naturally, disrupting connectivity between corridors that support our economy and wellbeing. Through linking ecologically important areas, it is possible to rebuild landscapes and maximise the benefits financially through agricultural and mined lands. This can lead to better management of human communities as loss of biodiversity can change the dynamic of an ecosystem, leading to disastrous effects on the food industry that we heavily depend on.

Although history has demonstrated that human communities can adapt to changing climates to sustain productivity, the same thing can be said in relation to plant and animal species (U.S. Environmental Protection Agency, 2012). However, if this change is too great, we lose valuable biodiversity as species die and others become prominent. This is why proactive plans like this one will help significantly change the trajectory of Australia than if we do nothing.

'Diamonds From Coal' Initiative

'Diamonds From Coal', a strategic vision of the Tom Farrell Institute, recognises the significant impact climate change is having on communities and the economy to develop sustainable responses in order to protect Australia's biodiversity. As previously discussed, an important component of this initiative is the development of sustainable practices to work

towards the vision of a sustainable clean technology future. Another issue that the coal export industry could assist with is through allowing the use of their buffer lands; land owned by companies that is not yet being utilised for mining, as a test bed for timber alternatives.

There is a growing body of scientific research about the danger CCA treated timber poses for both human health and the environment, and the need for greater restrictions on its manufacture, use and disposal (Beder, 2003). CCA, or copper chromium arsenic, is the most widely used preservative in Australia for residential and industrial purposes to prolong the life of timber, with around 120 treatment plants currently operating around Australia (CSIRO, 2012). As recognised by the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the use of CCA for timber preservation "allows about $500 million worth of timber to be used in Australia in areas and applications where it would otherwise be unsuitable" (Beder, 2003, p. 32).

However, according to the World Health Organisation (WHO), considerable exposure to arsenic, a key ingredient of CCA, can initiate lung, bladder and skin cancer, as well as reproductive and neurological concerns (Beder, 2003). The recycling of CCA treated timber or alternatively, its disposal, also presents difficulties: if burnt, its smoke and ash releases high levels of copper, chrome and arsenic into the air and soil (Beder, 2003). While TFI recognises that the Australian Pesticides and Veterinary Medicines Authority (APVMA) banned the use of CCA for the treatment of timber for structures of frequent use and contact, such as public park tables and playground equipment (CSIRO, 2012), more research is needed so that government can support methods to decrease risk for human communities and the environment so that structures being built today will not have adverse impacts.

In regards to the future, we support the CSIRO's work towards the development and testing of new sustainable wood preservatives, and their investigations into accelerating test methodologies for a more efficient evaluation of these potential alternatives (CSIRO, 2012). Through collaboration between the CSIRO and the coal export industry, there will likely be an increase in funding and research, as well as community support towards such initiatives that are helping the environment while also helping communities. Economically, it will maximise the value of the Australian coal and mining sector in the long-term by exporting it as a market for clean technology products and services with a community focus in mind.

TOR: How climate change impacts on biodiversity may flow on to affect human communities and the economy

Recommendation 3 – Wildlife Corridor Plan

Support is considerably needed for this plan due to its contribution to the conservation and rehabilitation of biodiversity nationally. Effective and efficient planning between land managers with appropriate incentives will ensure initiatives like this one are financially viable and allow natural habitats and human communities to co-exist.

TOR: How climate change impacts on biodiversity may flow on to affect human communities and the economy

Recommendation 4 – 'Diamonds From Coal' Initiative

An increase in government funding for the CSIRO to continue developing and testing new sustainable wood preservatives is needed to protect human communities and the economy against risks associated with previous practices. Future development between industry and government bodies through buffer land use will also significantly help in testing alternative products and services.

4.0 Conclusion

The issue of biodiversity in a changing climate is one close to the heart of The Tom Farrell Institute for the Environment, and one we believe should be of utmost importance to the Australian community. As demonstrated through this submission, real change will only come

about through the support, funding, and development of mutually beneficial relationships between all members and groups, both government and non-government, in society. We praise the House Standing Committee on Climate Change, Environment and the Arts for undertaking this inquiry, and we look forward to its findings.

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