WENTWORTH GROUP

OF CONCERNED SCIENTISTS

Submission to the
Senate Environment and Communications References Committee
Inquiry into the Government's Direct Action Plan

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The Australian Government acknowledges the science of climate change and supports national and global efforts to reduce greenhouse gas emissions.[1] However, given the scale of emissions reductions that will be required for the world to combat climate change, the Wentworth Group has significant concerns about the methods proposed by the Government to reduce greenhouse gas emissions. We also have suggestions for improving the potential for carbon farming to not only contribute to the climate change solution, but also to play a significant role in the long term restoration of degraded landscapes across Australia.

This submission addresses matters i, vi and xii of the Inquiry's terms of reference:

i. Whether the Direct Action Plan has the capacity to deliver greenhouse gas emissions reductions consistent with Australia's fair share of the estimated global emissions budget that would constrain global warming to Australia's agreed goal of less than 2 degrees;

vi. The repeal of the Clean Energy Package and the Direct Action Plan's impact on, and interaction with, the Carbon Farming Initiative;

xii. The ability of the Government and the Australian people to receive expert independent advice on an appropriate carbon pollution cap for Australia following the abolition of the Climate Change Authority.

Summary points:

1. Climate change is real and it is extremely likely that it is caused by humans;
2. It is in Australia's national interest to support a global agreement to limit temperature increases to no more than 2 degrees above pre-industrial levels;
3. Limiting climate change to less than 2 degrees warming will require Australia to commit to substantial emission reduction targets;
4. We can find no evidence that the government's Direct Action Policy has the capacity to achieve such a target;
5. With appropriate action, carbon farming has the potential to both contribute to the climate change solution and play a significant role in the long term restoration of degraded landscapes across Australia; and
6. It is important to retain an independent statutory authority to provide the Government and the Australian people with expert independent advice on an appropriate carbon pollution cap for Australia.

1. Climate change is real and it is extremely likely that it is caused by humans.

The latest Intergovernmental Panel on Climate Change report on the physical science, released on 30 September, 2013, has concluded that *'warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia',* and that *'it is extremely likely (>95 per cent [probability]) that human influence has been the dominant cause of the observed warming since the mid-20th century'.*[2]

Without significant global action in the immediate future to reduce greenhouse emissions, average global temperatures are projected to rise between 2 and 3.2 degrees above pre-industrial levels within the next 30 to 50 years (**Table 1**).

Table 1:
Projected change in global mean surface air temperature and global mean sea level rise relative to reference period 1850-1900

		2046-2065			2081-2100		
Variable	**Scenario**	**mean**	**likely range**		**mean**	**likely range**	
Global Mean Surface Temperature Change (°C)	RCP2.6	1.6	1.0 to	2.2	1.6	0.9 to	2.3
	RCP4.5	2.0	1.5 to	2.6	2.4	1.7 to	3.2
	RCP6.0	1.9	1.4 to	2.4	2.8	2.0 to	3.7
	RCP8.5	2.6	2.0 to	3.2	4.3	3.2 to	5.4
Variable	**Scenario**	**mean**	**likely range**		**mean**	**likely range**	
Global Mean Sea Level Rise (m)	RCP2.6	0.43	0.36 to	0.51	0.59	0.45 to	0.74
	RCP4.5	0.45	0.38 to	0.52	0.66	0.51 to	0.82
	RCP6.0	0.44	0.37 to	0.51	0.67	0.52 to	0.82
	RCP8.5	0.49	0.41 to	0.57	0.82	0.64 to	1.01

Based on Summary for Policy Makers (SPM) Table SPM.2 (page 25), IPCC Working Group I Fifth Assessment Report, 30 Sept 2013.To adjust for the change in reference period from 1986-2005 used in Table SPM.2 to the reference period 1850-1900, 0.61C has been added to all global mean surface temperature change values (see Note (a) of Table SPM.2) and 0.19m has been added to all global mean sea level rise values (see Fig SPM and SPM section B4). [3] Note that RCP stands for "Representative Concentration Pathways".[4].3

2. It is in Australia's national interest to support a global agreement to limit temperature increases to no more than 2 degrees above pre-industrial levels.

Australia is one of the most vulnerable countries to climate change and is already experiencing the impacts of more frequent and severe extreme weather. The 2011 Australian State of the Environment report has identified climate change as a clear and present threat to Australia's ecosystems.[5]

During the past 50 years, Australia has experienced increases in hot days, heavy rainfall events, very high fire danger and reductions in cold extremes.[6] These trends point to the potential for very serious negative impacts on the condition of our natural resources (soil, water, biodiversity and coastal zone) and the human communities that depend on them. [7] These ecosystem services form the foundation of Australia's socio-economic wellbeing.

Numerous studies, both Australian[8] and international,[9] also show that Australian irrigated and dryland agriculture can be expected to suffer negatively from the impacts of climate change. Importantly, these impacts create implications for food security and traditional agricultural export industries.

These trends are predicted to continue and to increase in magnitude due to increasing greenhouse gas emissions and are of special concern to Australia because of the limited water resources in southern Australia, the already high rates of extinction of native fauna and threat to some remaining species, and the country's coastal settlement plan.

Without early, vigorous and ongoing mitigation measures, there is a high probability of more severe climate change and the associated risk of higher rates of biodiversity loss in the coming decades and centuries, which will undermine the most effective adaptation measures.[10]

3. Limiting climate change to less than 2 degrees warming will require Australia to commit to substantial emission reduction targets.

The international community, of which Australia forms a part, has recognised that deep cuts in global greenhouse gas emissions are required and that there is a need to limit the increase in global average temperature compared with pre-industrial to less than 2 degrees.[11]

For the world to have a 67 per cent chance of reaching this target and thus avoiding dangerous climate change, the global carbon budget is 1,700,000 million tonnes of carbon dioxide equivalent (Mt CO_2-e) between 2000 and 2050.[12] Approximately 35 per cent of this budget has already been used between 2000 and 2012.[13]

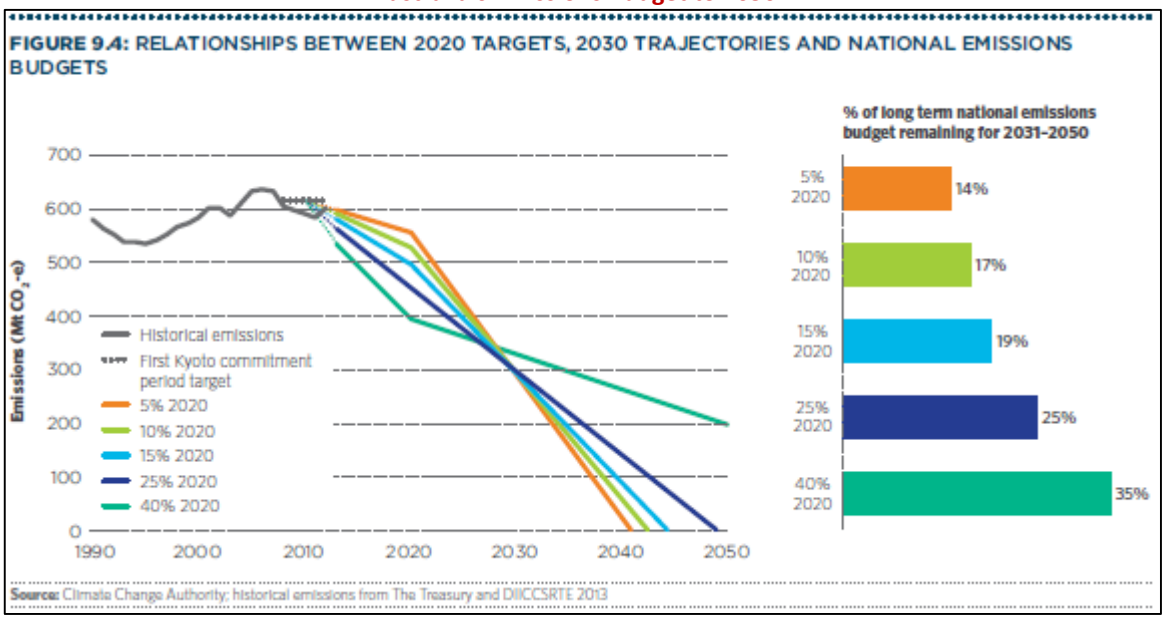
According to the Australian Climate Change Authority, to stabilise the global average temperature at below 2 degrees warming, an appropriate emissions budget for Australia is 10,100 Mt CO_2-e between 2013 and 2050.[14] Based on this budget, the Authority states that for Australia:

1. A 5 per cent emissions reduction target for 2020 'requires an implausibly rapid acceleration of effort between 2020 and 2030 to remain within the long term budget';[15]
2. A 15 per cent emissions reduction is the 'minimum 2020 target that can be credibly combined with the recommended budget' as it would 'require some acceleration after 2020';[16] and
3. A 25 per cent emissions reduction target for 2020 'sets a pace that needs to be maintained', not accelerated, through to 2050 and would 'keep open the possibility of pursuing a stronger 2050 budget or a lowering warming limit in the future' (**Figure 1**).[17]

In other words, Australia's contribution to such a target would require a reduction of well in excess of 80 per cent by 2050.

The design of any short term climate mitigation action by Australia should, therefore be capable of making a meaningful contribution to such a global agreement to stabilise global temperatures below 2 degrees above pre-industrial levels.

Figure 1:
Australian Climate Change Authority advice on Australia's Emissions Budget to 2050[18]



4. **We can find no evidence that the government's Direct Action Policy has the capacity to achieve such a target.**

   Achieving the scale of emissions reductions to avoid dangerous climate change will require a range of institutional responses. All such policy decisions should be informed by the best information from relevant experts, including scientists and economists.

   The Wentworth Group accepts the advice of economic experts, including the Australian Productivity Commission,[19] the Australian Treasury,[20] and the Garnaut Review,[21] that an emissions trading scheme is by far the most cost effective way for Australia to contribute to global efforts to mitigate climate change. The Howard Government's Prime Ministerial Task Group on Emissions Trading also found that 'the most efficient and effective way to manage risk is through market mechanisms' and that 'an Australian emissions trading scheme would allow our nation to respond to future carbon constraints at least cost'.[22]

   The Government's proposed policy is to abolish the Clean Energy Package which is designed to transition to an emissions trading scheme and replace this with its Direct Action Plan.

   We can find no evidence that this Direct Action Plan has the capacity to deliver greenhouse gas emissions reductions that would constrain climate change to Australia's agreed goal of less than 2 degrees warming.

   For this reason the Wentworth Group does not support the Government's Direct Action Plan.

5. **With appropriate action, carbon farming has the potential to both contribute to the climate change solution and play a significant role in the long term restoration of degraded landscapes across Australia.**

   Most of the focus in climate change mitigation needs to be on reducing emissions from energy generation, manufacturing and transport. It is near impossible to achieve the scale of reductions required unless we also harness the full potential of our landscapes to remove carbon from the atmosphere and store it in vegetation and soils.[23]

   CSIRO has estimated the biophysical potential of the Australian landscape to store carbon.[24] Whilst only a proportion of the total potential is practically achievable and it will take time to build effective capacity, if Australia were to capture 15% of the biophysical potential of our landscape to store carbon, it would offset the equivalent of 25% of Australia's current annual greenhouse gas emissions, every year for the next 40 years.[25]

   All of this might work, but it will not work without a price on carbon.

   In October 2009, the Wentworth Group released the report *Optimising Carbon in the Australian Landscape: How to guide the terrestrial carbon market to deliver multiple economic and environmental benefits*. The report outlines the opportunities for terrestrial carbon to address other great environmental challenges confronting Australia: repairing degraded landscapes, restoring river corridors, improving the condition of our agricultural soils, conserving Australia's biodiversity and adapting to climate change.

   With a price on carbon, the multiple public policy benefits for Australia in adopting full terrestrial carbon offsets are enormous, because healthy landscapes store vast quantities of carbon. Our natural landscapes and agricultural systems are built from carbon.

   However, there are also significant risks from an uncapped, unregulated market. Without complementary land use controls and water use accounting arrangements in place, there is a risk that carbon forests could take over areas of high quality agricultural land or affect water availability. This could create adverse impacts on food and fibre production, and impact on regional jobs that are dependent on these industries.

We need to manage the carbon offsets market so that carbon farming is conducted in areas of highest benefit, and away from areas of high risk. We need to plan for where we want trees, where we produce food and where we might do both.

We believe these issues can be addressed by the Government putting in place complementary measures to:

1) Optimise carbon offsets using natural resource and land use plans; and
2) Use economic instruments to address other market failures.

These complementary measures are additional to the primary focus on reducing emissions from energy generation, manufacturing and transport.

5.1 Optimise carbon offsets using natural resource management and land use plans

Whilst the Australian Government does not have constitutional power over land use, by creating the carbon offset market it does have a responsibility to ensure that appropriate institutional arrangements are put in place for ensuring complementary measures such as carbon offsetting are scientifically robust, efficient, and effective.

The Government has provided financial assistance to regional NRM bodies and state, territory and local governments to upgrade regional NRM plans in accordance with the Carbon Farming Initiative. These regional plans should identify where in the landscape carbon offset investments can improve the health of agricultural soils, protect areas of high conservation significance and repair degraded landscapes, and where there might be perverse impacts on high value agricultural land or water availability.

The most effective approach for optimising carbon farming offsets at the appropriate scale is for state, territory and local governments to link regional NRM plans across Australia to land use planning schemes and zone land according to its suitability for carbon farming offsets.[26] Land use planning schemes can then guide carbon farming offsets into areas of highest benefit and away from areas of risk, without significantly undermining the terrestrial carbon market.

Linking regional NRM plans to land use plans is a cost effective mechanism for providing certainty to both investors and the community that investments in carbon farming maximise other benefits and minimise the risk of adverse impacts on the economy, regional communities and the environment.

5.2 Using economic instruments to address other market failures

Whilst land use planning, informed by regional NRM plans, can make a substantial contribution to optimising community and environmental benefits arising from carbon farming, such planning alone does not guarantee that offset projects will maximise environmental, social and economic benefits.

The Government should ensure that complementary processes are put in place to deliver multiple benefits from carbon investments, such as by maintaining and expanding the positive and negative lists in the *Carbon Credits (Carbon Farming Initiative) Act 2011*. Multiple benefits include improving the health of our agricultural soils, protecting areas of high conservation significance and repairing degraded landscapes; and setting rules to ensure that carbon investments don't damage native vegetation, water resources and prime agricultural land.

The positive list exists as a simple means of streamlining project assessment against the additionality standard, and the negative list prevents carbon farming activities that have a high potential for perverse outcomes. As such, these are important instruments to maintain, and should be upgraded when regional NRM plans identify where in the landscape carbon offset projects can achieve co-benefits, where there might be adverse impacts, and where the outcomes of these regional planning processes have been incorporated into state and local government land use planning schemes.

6. **It is important to retain an independent statutory authority to provide the Government and the Australian people with expert independent advice on an appropriate carbon pollution cap for Australia**

   Due to the complex and contentious nature of climate policy – including the need to assess competing values and priorities and the implications of different policy options over very long time scales - the Australian Government needs the best available expert, science-based advice.

   A permanent body to supply this advice should have a recognised statutory role so that it can deliberate carefully on the long term interests of Australian society. The continuity and rigour of such independent advice is essential for creating business and investor certainty, and for informing the community more broadly.

NOTES AND REFERENCES

[1] Commonwealth of Australia, 2013. *Emissions Reduction Fund Green Paper*, p 1.

[2] IPCC, 2013. *Climate Change 2013: The Physical Science Basis.* Working Group 1 Contribution to the IPCC Fifth Assessment Report. 30 September, 2013

[3] IPCC, 2013. *Change 2013: The Physical Science Basis.* Summary for Policymakers. Working Group 1 Contribution to the IPCC Fifth Assessment Report. 30 September, 2013.

[4] For more information see IPCC, 2013. *Climate Change 2013: The Physical Science Basis.* Working Group 1 Contribution to the IPCC Fifth Assessment Report. 30 September, 2013.

[5] State of the Environment 2011 Committee. Australia State of the Environment 2011. Independent report to the Australian Government Minister for Sustainability, Environment, Water Populations and Communities. Canberra, DSEWPaC, 2011, p 112.

[6] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and Progress*, Draft Report. October 2013, Section 2.2.1, pp 28-30.

[7] Wentworth Group submission to the Senate Environment Communications and References Committee Inquiry into recent trends in and preparedness for extreme weather events, January 2013.

[8] Howden, S.M. & Crimp, S. 2005. 'Assessing dangerous climate change impacts on Australia's wheat industry', in A. Zerger & R.M. Argent (eds), International Congress on Modelling and Simulation: MODSIM 2005, Modelling and Simulation Society of Australia and New Zealand, pp. 170–6; and Stokes, C. & Howden, M. (eds) 2010, *Adapting Agriculture to Climate Change: Preparing Australian Agriculture, Forestry and Fisheries for the Future* (CSIRO Publishing, 2010).

[9] Elliott, J. et al, 'Constraints and potentials of future irrigation water availability on agricultural production under climate change', *PNAS*, December 2013, DOI: 10.1073/pnas.1222474110; see also Computation Institute (2013, December 16). Lost freshwater may double climate change effects on agriculture. *ScienceDaily*. Retrieved January 24, 2014, from http://www.sciencedaily.com /releases/2013/12/131216154330.htm.

[10] The Productivity Commission has recommended that reforms to remove barriers to effective climate change adaptation that can deliver net benefits should be implemented without delay: Productivity Commission, *Inquiry Report: Barriers to effective climate change adaptation*, March 2013, recommendation 5.1.

[11] UNFCCC agreement in Cancun 2010, Decision 1/CP.16, para 4, <http://unfccc.int/key_steps/cancun_agreements/items/6132.php>.

[12] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, p 44.

[13] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, p 44.

[14] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, p 103.

[15] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, p 104.

[16] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, pp 104,105.

[17] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, pp 104,105.

[18] Climate Change Authority, 2013. *Reducing Australia's Greenhouse Gas Emissions – Targets and* Progress, Draft Report. October 2013, p 104.

[19] Productivity Commission, 2011. *Carbon Emission Policies in Key Economies*, Research Report, Canberra.

[20] Commonwealth of Australia, 2011. *Strong Growth, Low Pollution: Modelling a Carbon Price*.

[21] Garnaut, R. 2011. *Garnaut Review 2011: Australia in the Global Response to Climate Change*.

[22] Prime Ministerial Task Group on Emissions Trading, 2007. Australian Government, *Report of the Task Group on Emission Trading*, p6.

[23] Wentworth Group of Concerned Scientists, 2009. *Optimising carbon in the Australian landscape: How to guide the terrestrial carbon market to deliver multiple economic and environmental benefits.* October 2009. p3.

[24] CSIRO, 2009. *Analysis of greenhouse gas mitigation and carbon biosequestration from rural land use.* Edited by Sandra Eady, Mike Grundy, Michael Battaglia and Brian Keating for the Queensland Premiers Climate Change Council.

[25] Wentworth Group of Concerned Scientists, 2009. *Optimising carbon in the Australian landscape: How to guide the terrestrial carbon market to deliver multiple economic and environmental benefits.* October 2009.

[26] See discussion on regulating the terrestrial carbon market in Wentworth Group of Concerned Scientists, 2009. *Optimising carbon in the Australian landscape: How to guide the terrestrial carbon market to deliver multiple economic and environmental benefits.* October 2009. p16.