

Climate Policy Analysis Tool

Client: The Climate Institute Pty Ltd

Simulation: The Australian Coalition 15-07-2010

CPAT – CI – Coalition-15-07-2010 (combined)

Climate Risk Pty Ltd provide specialist professional services to business and government on risk, opportunity and adaptation to climate change.

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1 Introduction

This briefing sets out the results of a modelling run to test a specified climate change policy package on Australia’s greenhouse gas emissions.

The policy package is specified below and has been modelled using the Climate Risk Industry Sector Technology Allocation Model (CRISTAL). This is a computational model that uses Monte Carlo methods to consider a range of possible outcomes simultaneously. Details of the CRISTAL model are provided in a companion document to this briefing.

The way in which Government Policy will create change is dependent upon the policy mechanism, the sectors and industries involved, their scale and possible constraints to growth, the resources being used and barriers to uptake, as well as other factors. Where possible the data required to specify these parameters is sourced from the public domain. If ranges of opinion exist then these are included as input probability distributions. Otherwise assumptions are made which are specified in this briefing.

2 Run Details

Client :	The Climate Institute
Simulation Date:	15-07-2010
Run Name :	Coalition Climate and Energy Policies as of 15-07-2010
Simulation Type:	Monte Carlo - 5,000 cycles
Baseline:	The emissions base-line is based on projections from the DCC’s “Fifth National Communication on Climate Change”, 2010 and the Commonwealth of Australia’s “Australia to 2050: Future Challenges”, 2010.
Population in 2050	35.9 million

3 Explanation of Results

- The results indicate that the Coalition emissions reductions are dominated by the Emissions Reduction Fund.
- The level of impact of the fund on emissions is uncertain as it is the size of the fund which is mandated not the emission reductions achieved.
- In this model a quarter of the fund has been assumed to be applied to the power sector, to pay for gas displacing coal.
- The rest is assumed to come from a range of low and moderate opportunities. These are all assumed to be compliant under the Kyoto accounting rules and could flow to land use actions, energy efficiency and other abatement opportunities. In this run the expenditure flows mainly to energy efficiency measures.
- A range of costs of abatement have been included in the model, with a ‘best estimate’ set at a marginal cost consistent with ClimateWorks 2010 low and moderate costs (\$18 tCO₂e) with a 25% premium to account for transaction cost. This would result in 76MtCO₂e reductions compared to projected emissions in 2020, but still a 41MtCO₂e increase on 2000 levels or about a +8% increase.
- However there is a high degree of risk in the policy that could play out positively or negatively. If average carbon prices of \$10 per tonne were achieved in the scheme a reduction as much as -10% compared to 2000 levels could be achieved, however if carbon prices were above \$50MtCO₂e as many studies predict, the effect would be net increase of over +12% in emissions compared to 2000 levels.
- Soil carbon for abatement is a significant theme in the policy package, however it is not currently included under Australia’s emissions accounting rules. Australia could elect to have such measures included in its inventory, but this would require a re-setting of the baseline. To deal with this issue, the abatement from soil carbon has been re-assigned to Kyoto compliant sources at equal marginal cost, therefore there has been no loss of abatement for the Coalition non-compliant abatement options.

4 Summary of Results

Parameter	2013	2020	2050	Units
Total national emissions (with all policies)	593	594	640	MtCO ₂ e
Change in emissions with respect to baseline	-8	-76	-257	MtCO ₂ e
Percentage change in emissions with respect to baseline	-1	-11	-29	%
Change in emissions with respect to 1990	+45	+46	+92	MtCO ₂ e
Percentage change in emissions with respect to 1990	+8	+8	+17	%
Change in emissions with respect to 2000	+40	+41	+87	MtCO ₂ e
Percentage reduction in emissions with respect to 2000	+7	+7	+15	%
(Final) energy intensity per \$ GDP	0.9	0.7	0.4	kWh/2005\$
Emission intensity per \$ GDP	0.5	0.4	0.2	kgCO ₂ e/2005\$

5 Trends to 2020

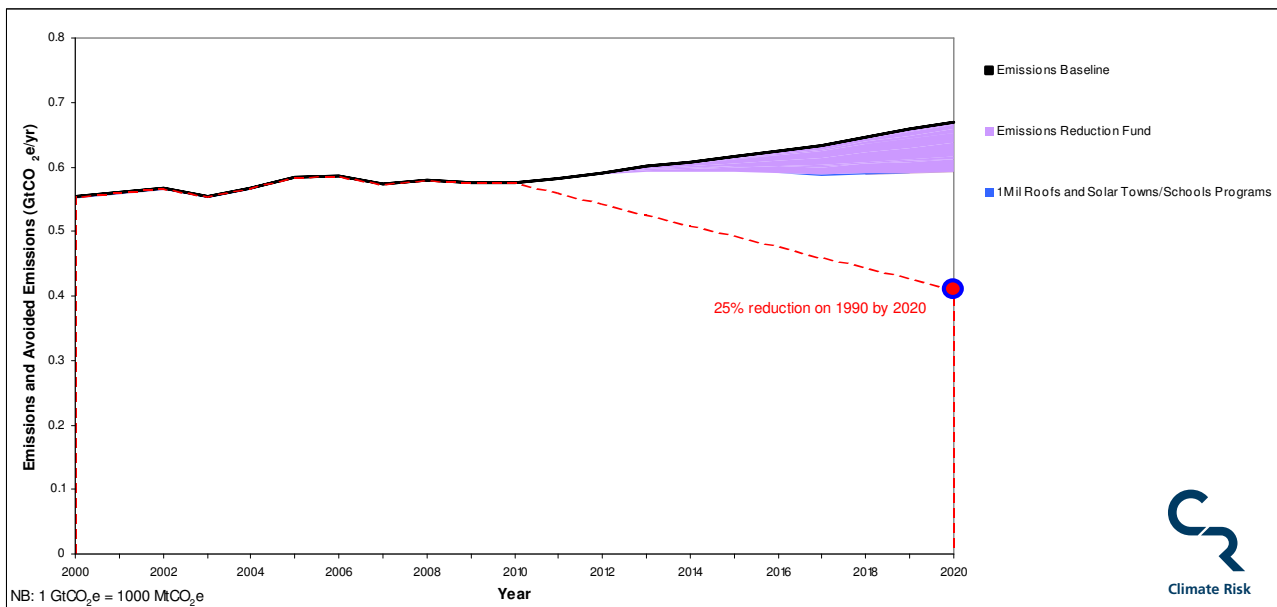


Figure 1: Emissions to 2020 with full y-axis.

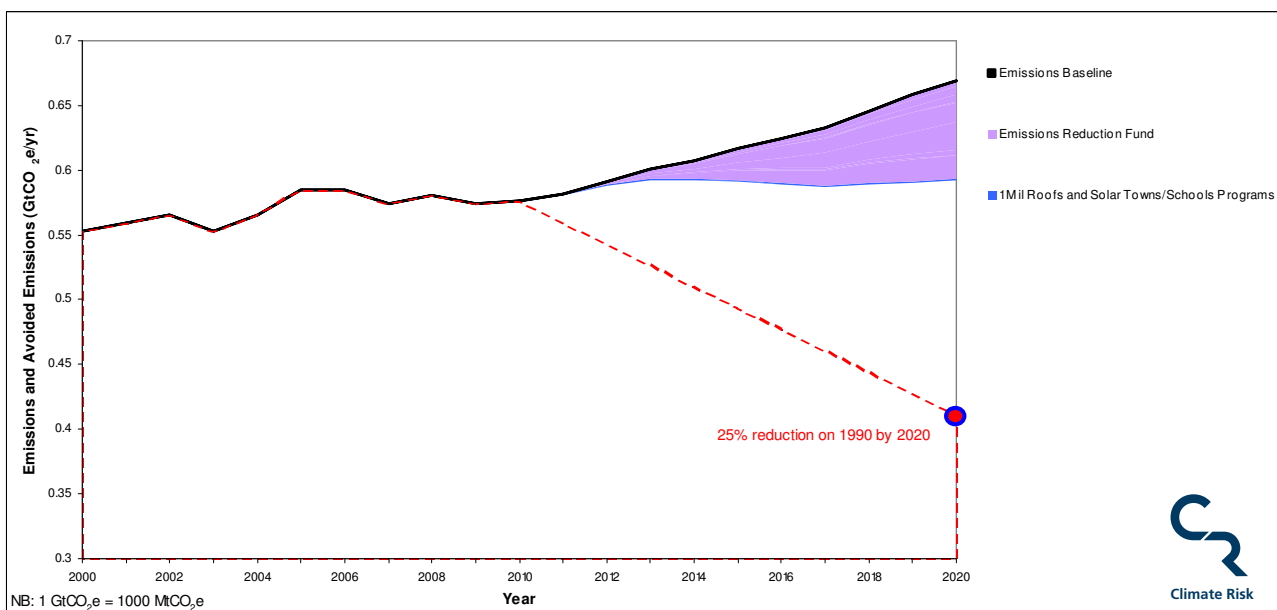


Figure 2: Emissions to 2020 with zoomed y-axis.

6 Trends to 2050

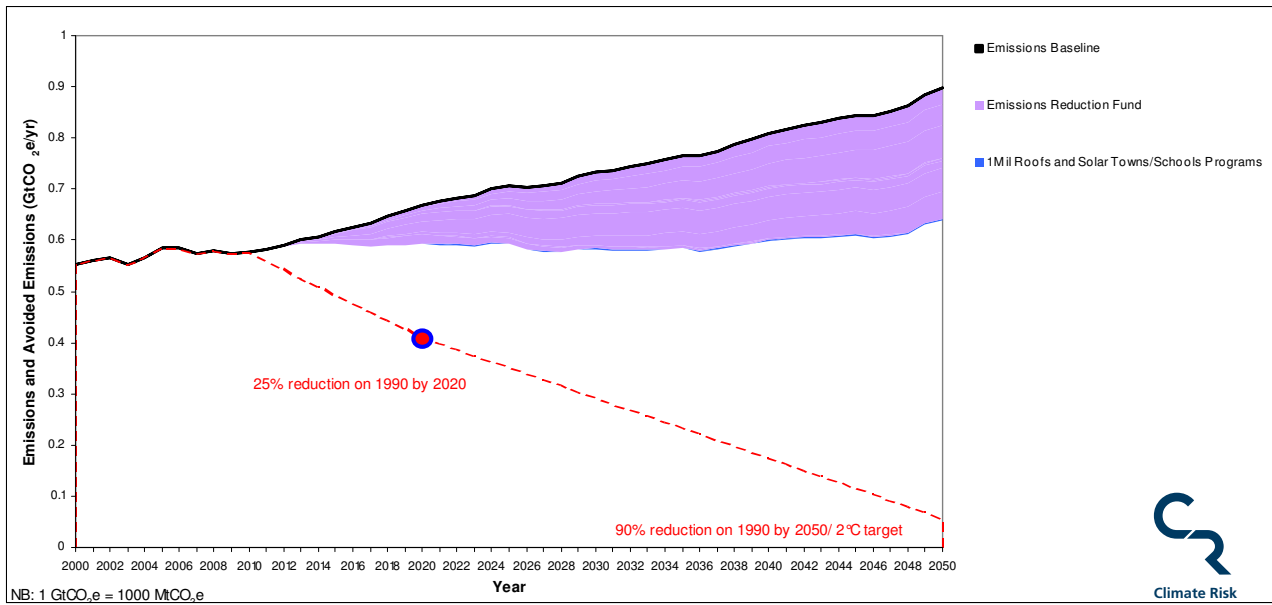


Figure 3: Emissions to 2050.

7 Economic Intensity Trends to 2050

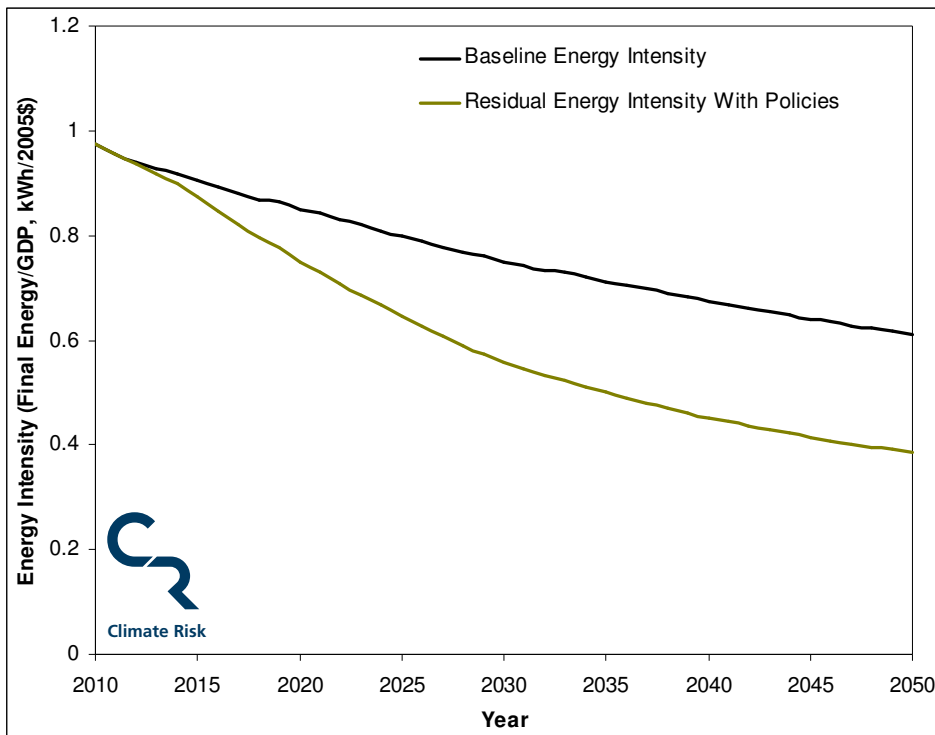


Figure 4: Energy intensity of economy (final energy in KWh per \$GDP).

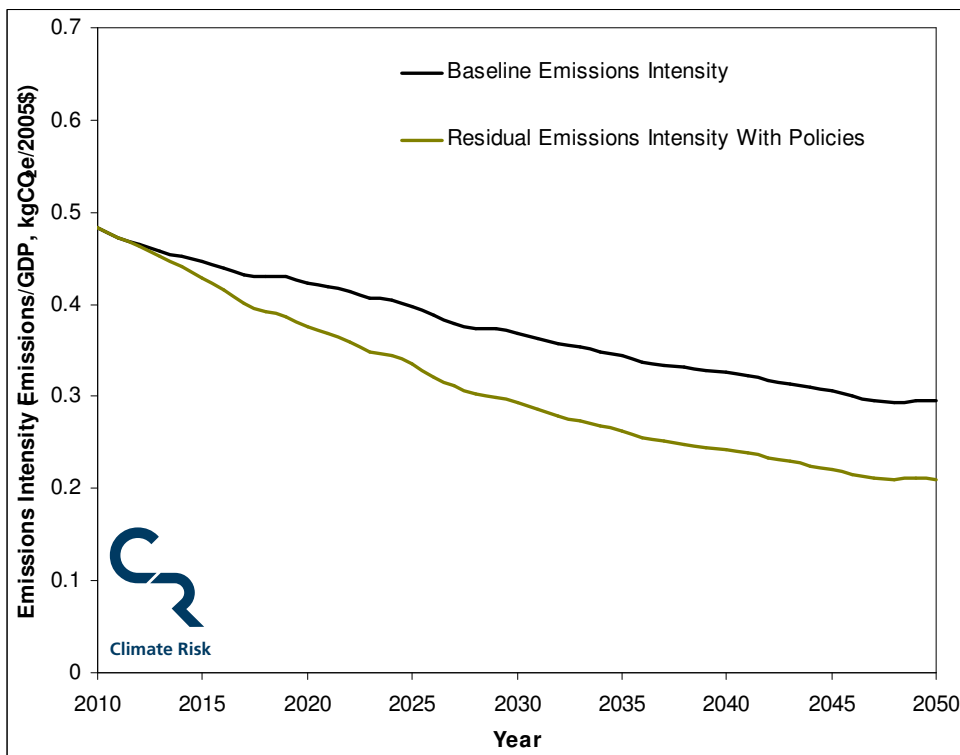


Figure 5: Emissions intensity of economy (kgCO₂e per \$GDP).

8 Policies and Assumptions

Policy Measure and Description	Assumptions	Sources and Clarifications
<p>Emission Reduction Fund (ERF)</p> <p>-Government fund to purchase emissions abatement from businesses - a baseline and credit type scheme, with the government buying the credits, rather than other businesses.</p> <p>-Scheme will apply to all businesses covered by NGERs, with voluntary opt-in for other businesses</p> <p>Timing: scheme to commence in 2011-12 and run until 2020.</p> <p>-Value of the fund:</p> <p>\$1.2 billion on average out to 2020</p> <p>2011-12: \$300 million</p> <p>2012-13: \$500 million</p> <p>2013-12: \$750 million</p> <p>2014-15: \$1,000 million</p> <p>The Coalition has identified the following areas to be funded through the fund:</p> <p>-Soil Carbons - Government to directly purchase 'up to' 85 million tonnes of CO2 abatement per annum, beginning with 10 million tonnes in 2012-13. -Farmers to submitted tenders to supply 'verified new additions in soil carbon beyond the commencement of the Fund.'</p> <p>-Electricity Generators & Industry "Through the Emissions Reduction Fund, a Coalition Government will make incentives available for the oldest and most inefficient power stations to reduce their emissions in an orderly manner..."</p> <p>Other possible areas for funding are Forestry Measures, Waste Coal Mine Gas, Green Buildings/ Energy Efficiency and Transport</p>	<p><i>-Emissions impact included</i></p> <p>-All abatement included either is Kyoto compliant.</p> <p>-Funding is in 2010 real dollars</p> <p>-As per DCCEE estimates, funding is assumed to be \$2.08 billion in 2020</p> <p>-25% of fund is pre-allocated to stationary energy (as per clarifications) for coal conversion.</p> <p>-Fund will be allocated least cost first.</p> <p>-Lower cost estimate follows coalition 'Direct Action' paper estimates.</p> <p>Upper cost estimate: follow DCC 2010 analysis briefing note.</p> <p>-Internal Estimate: Efficiency measures at aggregated Climateworks/ McKinsey \$18 per tCO₂e marginal abatement cost. 'Moderate cost' abatement is available at \$18 per tCO₂e plus 25% transaction cost.</p> <p>-All abatement is assumed to be additional.</p>	<p>- Coalition 2010</p> <p>- 25% will be set aside for converting power stations.</p>
<p>One Million Roofs Solar Program</p> <p>-One million additional solar energy roofs on homes by 2020, including either solar power or solar water heating systems by 2020</p> <p>- Coalition will provide an extra \$1000 rebate for either solar panels or solar hot water systems. The program would be capped at 100,000 rebates per year.</p> <p>-The rebate will be on top of existing incentives and will replace the current solar hot water incentive when it ends.</p>	<p><i>-Emissions impact included</i></p> <p>-PV and SHW installations are assumed to be non-additional to RET/RECS as so scheme will change the balance of the RET.</p> <p>-If intended to be additional, 1,000 is less than 10% of cost of system so inadequate incentive.</p>	Coalition 2010
<p>Solar Town, Solar Schools Initiative</p> <p>Pledge to allocate \$100 million to this program, which has two key parts:</p> <p>Solar Towns - 'competitive tenders commencing on 1 July 2011 for towns and non-capital cities to access direct solar energy for on site use and return to the grid.' 'Grants will be for a maximum of \$2 million each and will be allocated on the basis of greatest savings of CO2 per dollar of funding.</p> <p>Solar Schools</p> <p>'In addition to the existing (but suspended) Solar Schools program, a Coalition Government will hold competitive tenders commencing on 1 July 2011 for Flagship Solar Schools across the country to access major solar energy projects for on site use and return to the grid.'</p> <p>Grants will be for a maximum of \$500,000 each and will be allocated on the basis of greatest savings of CO2 per dollar of Government funding. The program will run for 4 years and support a minimum of 100 Solar Schools projects.</p>	<p><i>-Emissions impact included</i></p> <p>-Assume these are not RET eligible projects and so are fully additional</p>	Coalition 2010
<p>Geothermal and Tidal Towns</p> <p>'A Coalition Government will allocate \$50 million to a Geothermal and Tidal Towns Initiative to support the development of additional renewable energy opportunities at community level</p> <p>Competitive tenders commencing on 1 July 2011 for towns and non-capital cities to submit proposals for projects that access direct geothermal or tidal energy for on site use and potential return to the grid.</p> <p>Funding will be provided to support the establishment of micro, pilot and demonstration projects with the potential to provide renewable power to local communities.</p> <p>Grants will be for a maximum of \$2 million each and will be allocated on the basis of greatest savings of CO2 per dollar of Government funding.</p> <p>The program will run for four years and support a minimum of 25 Geothermal and Tidal town projects.'</p>	<p><i>-Emissions impact not included</i></p> <p>-Assume these are not RET eligible projects and so are fully additional</p>	Coalition 2010
<p>High Voltage Direct Current Transmission: Cleaning up our Cities and Supporting</p>	<p><i>-Emissions impact not included</i></p>	Coalition 2010

<p>Remote Renewable Energy A Coalition Government will commit \$2 million for a major study into the use and application of High Voltage Direct Current (HVDC) transmission within Australia, funded from our Solar Towns an Schools initiative.</p>		
<p>Renewable Energy Target: Support for emerging technologies A Coalition Government will create a band within the Renewable Energy Target to be reserved for larger renewable energy projects (over 50 megawatt) or for emerging technologies such as solar fields, geothermal projects or tidal and wave projects over 10 megawatt. The band to be reserved for these projects will be for up to 6,000 gigawatt hours by 2020 and details will be determined with the Clean Energy Council and other representatives from the renewables sector.</p>	<p><i>-Emissions impact included</i> -Assume this is segmentation of existing RET (non-additional), but creates further band.</p>	Coalition 2010
<p>Greenhouse Friendly Programme A Coalition Government will provide \$10 million to retain the 'Greenhouse Friendly' programme for a period of five years at a cost of \$2 million per year. The potential extension of the programme beyond this period will be reviewed after three years.</p>	<p><i>-Emissions impact not included</i> -no defined emission outcome</p>	Coalition 2010
<p>Algae fuels The Coalition will allocate \$5 million to this analysis subject to matching funding from within the Algal Energy and biofuels sector.</p>	<p><i>-Emissions impact not included</i> -no market development mechanism</p>	
<p>Urban Forests and Green Corridors A Coalition Government will commit to the planting of an additional 20 million trees by 2020 These trees will be for re-establishing urban forests and urban green corridors, using suitable public spaces in urban and regional corridors to be determined in consultation with local authorities and communities, and in accordance with principles of public safety, including fire and road safety provisions. Based on industry estimates, the planting of 20 million trees will require approximately 200 to 40 square kilometres of land area depending on the intensity, and can be delivered at a cost of around \$5 per tree</p>	<p><i>-Emissions impact not included</i> -Up to 1MtCO₂e could be included</p>	Coalition 2010
<p>Discontinue the Carbon Trust and Climate Change Foundation Campaign</p>	<p><i>-Emissions impact not included</i></p>	Coalition 2010
<p>Reduce funding for the Carbon Capture and Storage Flagships Program</p>	<p><i>-Emissions impact not included</i></p>	Coalition 2010
<p>Discontinue the Low Emission Assistance for Renters</p>	<p><i>-Emissions impact not included</i></p>	Coalition 2010
<p>Enhancement to RET</p> <ul style="list-style-type: none"> The split in the RET into LRET and SRET means that the target for large scale renewables will be revised downwards to 41,000GWh, by 4,000GWh. There is no cap on the number of small scale RECs that can be created, but the price can be reviewed, assumed to be regulated to 4,000GWh 	<p>-Assumed to deliver an additional 6750 GWh to the RET accounting currently included in the baseline data. Based in solar providing up to 5% of RECS - Effect is modelled at approximately 2.5MtCO₂e by 2020.</p>	DLA 2010
<p>Curtailement of Energy Efficient Homes Package</p> <ul style="list-style-type: none"> Ending of home insulation under the 'Energy Efficient Homes Package, including the Home Insulation Program and the Solar Hot Water Rebate Program' 	<p>-Estimated total abatement of scheme was 5MtCO₂e running 2007 to 2012, suspended /terminated after 2/3 years. - Assume that between 2 and 3 MtCO₂e will not be provided under the scheme.</p>	

9 References

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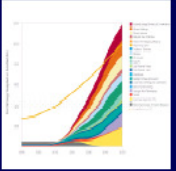
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