

Climate Policy Analysis Tool

Client: The Climate Institute Pty Ltd

Simulation: The Australian Greens 15-07-2010

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

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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 :	Greens 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 for the Greens Party show that five policies dominate the emission profile: expansion of the Renewable Energy Target (RET), zero net land clearing emissions, energy efficiency targets, a feed in tariff (FiT) and an Emissions Trading Scheme (ETS).
- The RET will tend to develop commercially mature and large scale renewables and the FiT will tend to accelerate the development of less mature technologies. It has been assumed that the FiT tariff will be set at a level to maximise the delivery of the annual targets with industrial constraints.
- Efficiency measures are modelled as bringing forward energy efficiency in the market with uptake of products and services which are (a) closer to best available and (b) forcing market uptake.
- Overall, all of the measures excluding ETS are modelled to provide about 18% emission cuts on 1990 levels by 2020, though the probability distribution of outcomes indicates that higher cuts are possible, but less probable.
- To meet the shortfall between the domestic action and the 25% emission cuts target, the ETS would need to drive additional domestic abatement or facilitate the international purchase of abatement credits from other countries. Previous work by Climate Risk indicates that industrial constraints on the development and deployment of new low-carbon industries at scale will limit achieving ambitious targets through domestic measures alone. The modelling indicates that current Greens policy could see the 2020 limits of domestic reductions beginning to be reached and this could mean that the Greens policy constraint of disallowing more than the 20% international trading in their ETS could be slightly too low to ensure the 25% target.
- This results also imply that achieving the Greens 40% target by 2020 in the context of ambitious global action would require substantial international emission trading. However the longer term targets could be provided domestically as low carbon resources are harnessed at increasing scale.

4 Summary of Results

Parameter	2013	2020	2050	Units
Total national emissions (with all policies)	527	411	0	MtCO ₂ e
Change in emissions with respect to baseline	-73	-258	-897	MtCO ₂ e
Percentage change in emissions with respect to baseline	-12	-39	-100	%
Change in emissions with respect to 1990	-21	-137	-548	MtCO ₂ e
Percentage change in emissions with respect to 1990	-4	-25	-100	%
Change in emissions with respect to 2000	-26	-142	-553	MtCO ₂ e
Percentage reduction in emissions with respect to 2000	-5	-26	-100	%
(Final) energy intensity per \$ GDP	0.9	0.8	0.4	kWh/2005\$
Emission intensity per \$ GDP	0.4	0.3	0.0	kgCO ₂ e/2005\$

5 Trends to 2020

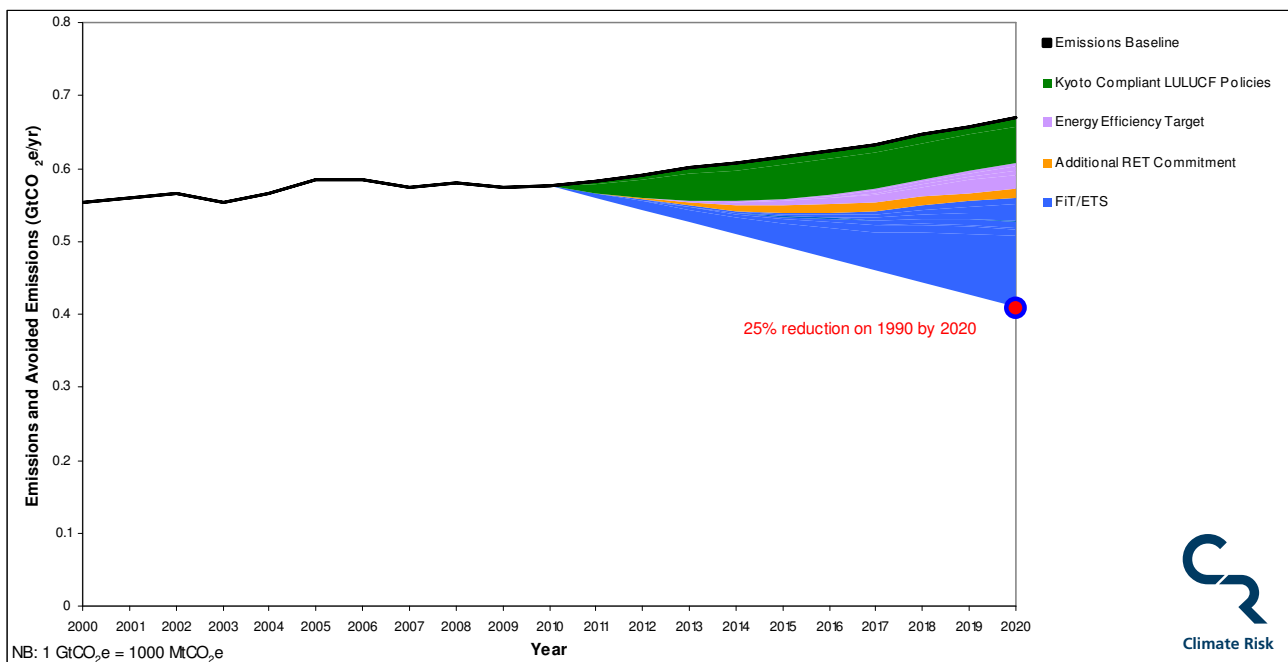


Figure 1: Emissions to 2020 with full y-axis.

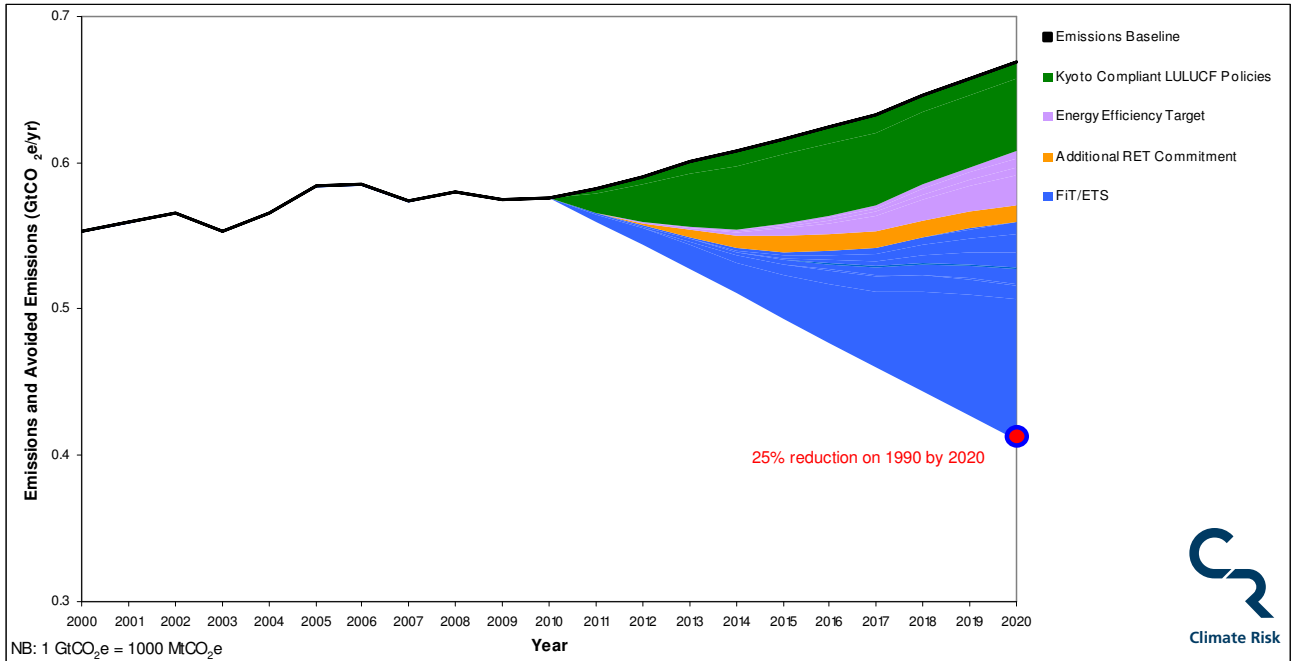


Figure 2: Emissions to 2020 with zoomed y-axis.

6 Trends to 2050

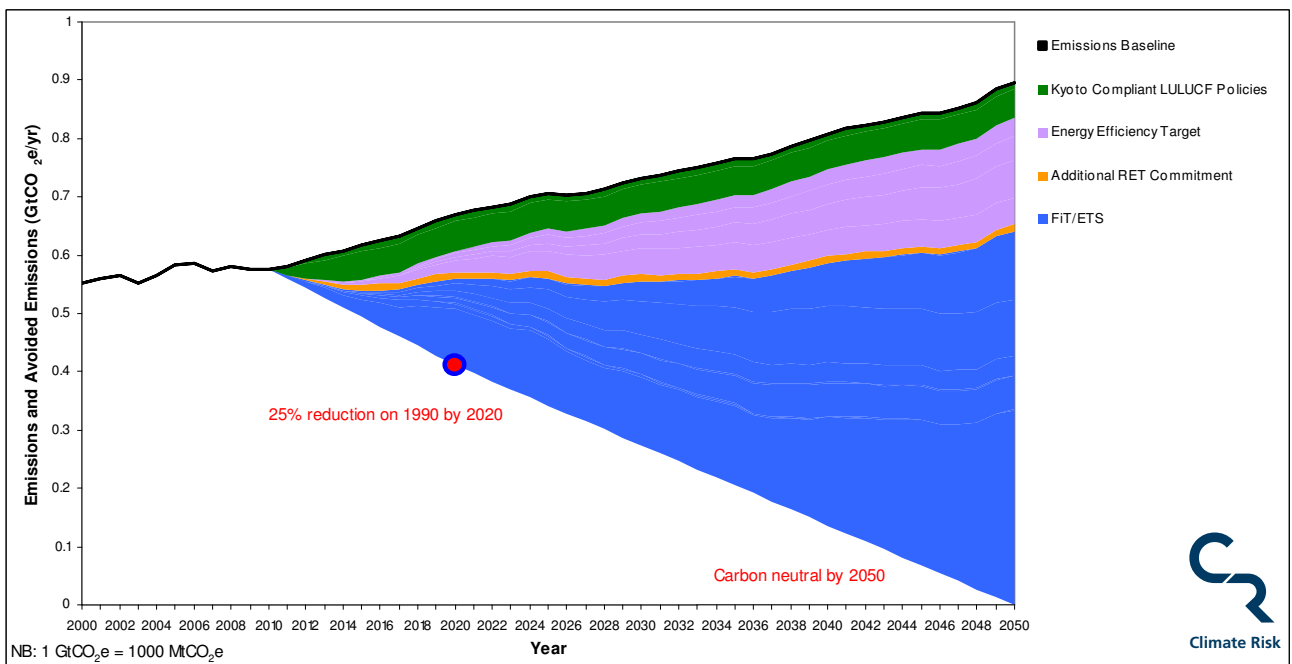


Figure 3: Emissions to 2050.

7 Economic Intensity Trends to 2050

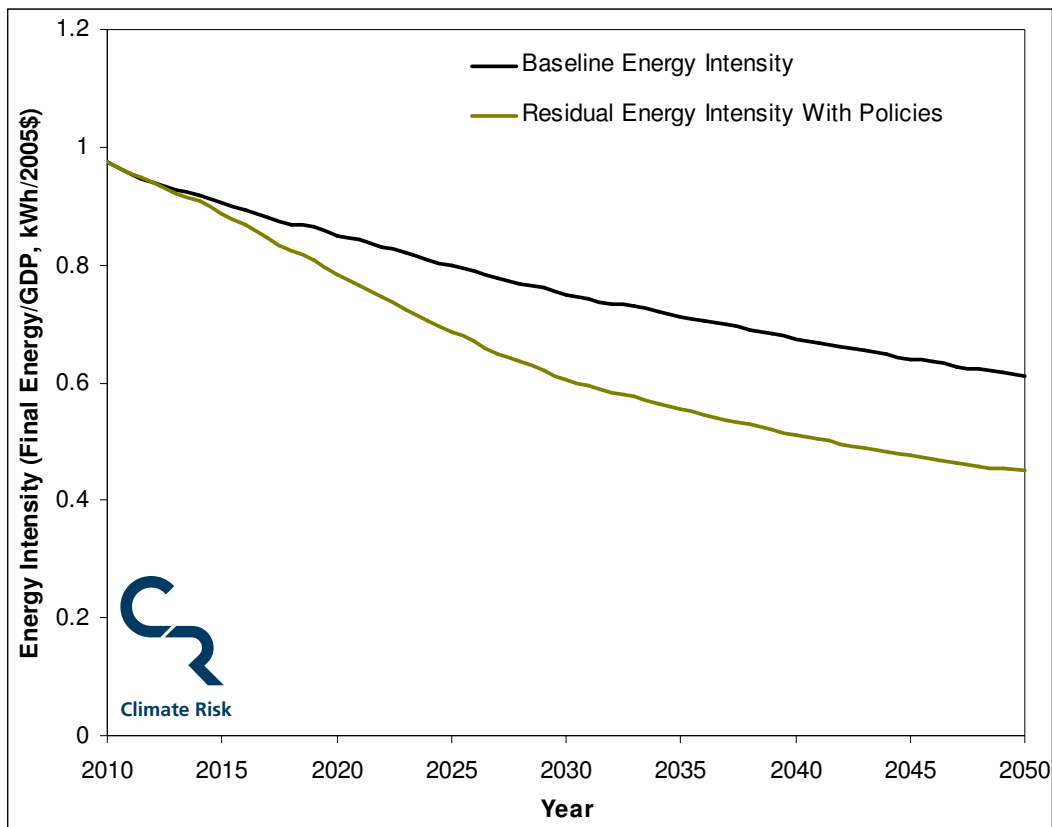


Figure 4: Energy intensity of economy (final energy in KWh per \$GDP).

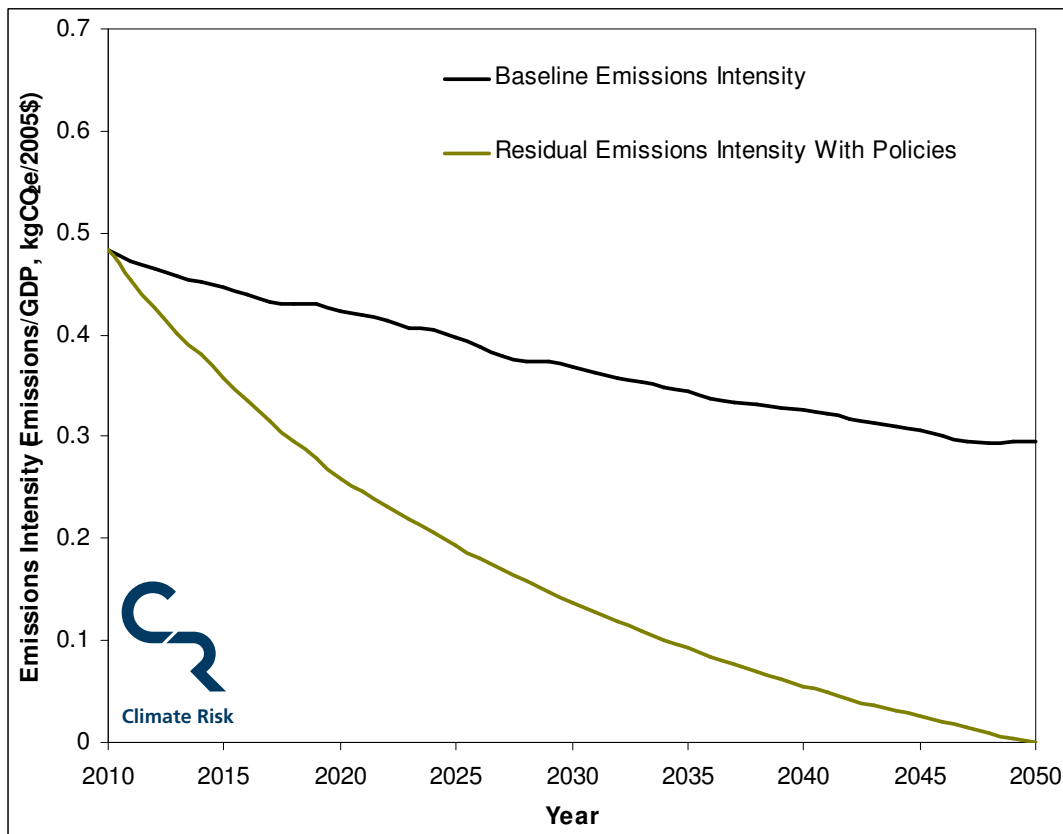


Figure 5: Emissions intensity of economy (kgCO₂e per \$GDP).

8 Policies and Assumptions

The emissions impact of all policies listed below are included in this scenario.

Policy Measure and Description	Assumptions	Sources and Clarifications
National Target <ul style="list-style-type: none"> 25% unconditional and 40% conditional cuts on 1990 levels by 2020, [Net] Carbon neutral by 2050 	-Delivery mechanism ETS or tax with hard cap	What means there are for negatives in 2050?
Emissions Trading / Carbon Tax <ul style="list-style-type: none"> Used to deliver above target 20% limit to international trade -gold standard Non-additional to other schemes, but additional where there is a shortfall in the delivery of the above targets 	-Assume first 20% is traded -Least cost first -Carbon cost as per treasury estimates to 2050	
Renewable Energy Target (RET) <ul style="list-style-type: none"> Increase the RET to 30% by 2020 Biannual review of targets post 2020 Remove solar hot water from the RET Exclude non-renewable sources, including greenfields coal-bed methane, and new hydroelectric and native forest fuelled power stations Remove EITE (Energy-Intensive Trade-Exposed) exemptions 	-No Nuclear or CCS -RET applies to all electricity consumption -Assume RET settings are allowed to increase post 2020.	http://greensmps.org.au/webfm/send/263 Will the RET targets be set at the levels required to achieve carbon neutrality? If not, how will they be set? Will the RET be expanded to cover transport sector requirements?
Enhancement to RET	-Assumed to deliver an additional 6750 GWh to the RET accounting currently included in the baseline data.	
Feed-in Tariff (FiT) <ul style="list-style-type: none"> Establish national feed-in tariff for commercial scale renewable energy projects FiT is additional to RET Objective is to support new industries to become cost effective 	-CCS and Nuclear not included -No cost limits -No size restrictions	http://greensmps.org.au/webfm/send/8
Renewable Energy Infrastructure <ul style="list-style-type: none"> Expand the mandate of Infrastructure Australia to invest in strategic network infrastructure to support renewable energy investments 	-Assume no infrastructure constraints to delivery of RET and FiT targets	
Energy Efficiency Opportunities <ul style="list-style-type: none"> Plans must identify all actions with a 10 year payback (up from 4 year currently). 3 yearly reviews creating on-going increase in efficiency 	-Assume EE is shifted to high end of modelled opportunity for commercial and industrial sectors	http://greensmps.org.au/webfm/send/267
Energy Efficiency Target (national white certificate scheme) <ul style="list-style-type: none"> Essentially a white certificate trading scheme, using baselines Sectoral scope: Industrial, commercial and residential sectors Fuels covered: electricity only (no gas) Annual savings target: 2% p.a. by 2015, annual targets out to 2030 to be set no later than 2015 assumed to be at least 2% 3%. 	-Annual efficiency progress is assumed to be 3%	http://greensmps.org.au/webfm/send/268 Is this non-additional to the EEO? Is can EEO opportunities be traded?
Accelerated depreciation <ul style="list-style-type: none"> Amend the tax laws allow corporate entities accelerated depreciation over a 3-year timeframe for the purchase of energy efficient plant and equipment 	- Emissions impact not included Assume this measure helps drive industrial energy efficiency above	http://greensmps.org.au/webfm/send/267
Sustainable Transport Infrastructure	- Emissions impact not included Assume no mandated shift to zero carbon energy sources	http://greensmps.org.au/webfm/send/271
Stringent fuel efficiency standards	-Assume applies to all vehicles -Assume no mandated shift to zero carbon energy sources	

Fringe Benefits Tax <ul style="list-style-type: none"> Amend the Fringe Benefits Tax to remove the incentive to increase vehicle use (with some minor exceptions) 	- Emissions impact not included - Assume this measure drives an increase in PT use	http://greensmps.org.au/webfm_send/269
Diesel fuel credits <ul style="list-style-type: none"> phase out diesel fuel subsidies by removing energy credits 	- Emissions impact not included - Assume this measure drives an increase in PT use	
Public Transport <ul style="list-style-type: none"> Remove the GST on public transport 	- Emissions impact not included - Assume this measure drives an increase in PT use	
Native Forest Carbon <ul style="list-style-type: none"> immediately prohibiting forest harvesting in high conservation value native forest; and immediately prohibiting the conversion of a pre-Kyoto native forest to certain alternative land uses; and phasing out the export of logs, woodchips or any other form of unprocessed wood obtained or derived from native forests; and 	-No net land clearing emissions (off-setting may be allowed)	http://greensmps.org.au/webfm_send/266
EPBC Trigger <ul style="list-style-type: none"> establish a low greenhouse trigger in the Environment Protection Biodiversity Conservation Act (EPBC), ensuring Federal oversight of developments which are liable to have a significant impact on domestic or global greenhouse emissions 	- Emissions impact not included Assume non-additional compliance measure for above policies	
Subsidies <ul style="list-style-type: none"> transfer subsidies and government support, including funding for research and development, from the fossil fuel sectors to energy efficiency and renewable energy 		http://greens.org.au/sites/greens.org.au/files/C1%20ClimateChange%20Nov%202009.pdf
No new coal – power stations or mines <ul style="list-style-type: none"> oppose the establishment of new coal-fired power stations, new coal mines and the expansion of existing mines. 	Mandated ban -Allows for coal with CCS (though the stringent 2050 emissions target eliminates the possibility of coal with CSS in 2050 on the grounds of residual emissions) -Allows from conversion to gas or other fuel	http://greens.org.au/sites/greens.org.au/files/C1%20ClimateChange%20Nov%202009.pdf
NEM Reform <ul style="list-style-type: none"> Reform the National Electricity Market to remove the bias towards centralised coal-fired generation, and encourage demand management and the development of distributed generation and renewable energy. 		http://greens.org.au/sites/greens.org.au/files/C1%20ClimateChange%20Nov%202009.pdf

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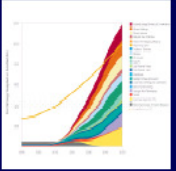
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