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Emissions Trading

by

Tom Edwards and Stewart Smith

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EXECUTIVE SUMMARY

As a party to the Kyoto Protocol Australia is obliged to limit greenhouse gas emissions to no more than 108 per cent of 1990 levels during the Kyoto commitment period (2008 to 2012). Australia is currently on-track to meet this target. Post-2012 targets for developed countries are being negotiated internationally, and negotiations are scheduled to conclude at a meeting in Copenhagen in December 2009. These negotiations will have a strong impact on any domestic policies to reduce greenhouse gas emissions.

The Commonwealth Government has adopted a long-term greenhouse gas emission reduction target of 60 per cent below 2000 levels by 2050, and is considering the scale and timing of the emission reductions Australia should pursue towards this goal. The Government has stated that it will introduce a carbon emission trading scheme in 2010 as the primary mechanism to achieve its emission reduction targets. This is to be known as the Carbon Pollution Reduction Scheme, proposals for which were outlined in a Green Paper in July 2008. A White Paper is due to be published by the end of 2008.

A 'cap and trade' greenhouse gas emissions trading scheme has the following elements:

- greenhouse gas emissions are capped at some level in each period;
- permits to emit greenhouse gases are issued for each period;
- there is a penalty for non-compliance which underpins a value for emissions;
- participants can trade emission permits among themselves.

It is proposed that the Scheme would include the six gases covered by the Kyoto Protocol, from facilities which emit more than 25,000 tonnes of greenhouse gases (CO_2 equivalent). Five of the seven sectors of the Australian economy are to be included in the scheme from 2010: stationary energy; transport; fugitive emissions; industrial processes; and waste. Together, these represent 77 percent of Australia's greenhouse gas emissions.

The limit on emissions, the cap, is the central feature of a cap and trade scheme. The level of the cap is critical because if it is set too high, and low permit prices result, there will be little incentive to reduce emissions. Conversely, setting the cap too low could impose excessive costs on industry. At the time of writing no firm decisions had been taken as to the scheme caps, and the Government has announced that it will confirm a medium-term target for Australian emission reductions up to 2020 in the White Paper.

The Government proposes that an emissions permit would be called an Australian Emissions Unit. One permit would correspond to one tonne of CO2-e of greenhouse gas emissions. A permit would be personal property and would confer rights on its owner, the main right being to surrender it to meet scheme obligations or to transfer it. Permits could not be cancelled by Government without compensation.

The Government has two choices for the allocation of permits: it could allocate them for free; or it could auction them. The choice of allocation has a strong influence on the impact of the scheme. The Government has proposed that a maximum of 80% of permits could be auctioned at the beginning of the scheme. Over time, the Government intends to move towards 100% auctioning of permits.

The Government intends to implement emissions trading through Commonwealth legislation. States and Territory Governments will be involved through ongoing consultation in the Council of Australian Governments.

The Government is designing the Carbon Pollution Reduction Scheme so that it can be linked to other international schemes. Linking involves importing units from other schemes and / or exporting units from Australia. Linking has strong implications not only on the operation of the scheme, but also on the domestic price of carbon and the overall cost of the scheme. The Government's preferred position is for relaxing restrictions on linking with credible schemes and mechanisms as the Australian scheme matures.

The introduction of an emissions trading scheme would impose a cost on Australian businesses that businesses in other countries without emissions trading will not have to bear. The concern is that it could cause some businesses to relocate their operations elsewhere, especially those who operate in markets where commodities are traded internationally and whose production gives rise to large amounts of emissions, the Emissions Intensive Trade Exposed industries. To help these industries the Government proposes to allocate free permits to cover 90% of the emissions of certain activities.

The introduction of emissions trading will affect emissions intensive industries in Australia, whether they are trade exposed or not. If businesses cannot pass on the cost of emissions because other domestic competitors have lower emission levels then this could reduce their profitability. The Government has committed to addressing the impact of emissions trading on "strongly affected industries" – particularly coal fired power generators.

The relative prices of goods and services will change as a result of the introduction of emissions trading. Emissions intensive products are likely to become more expensive as the "carbon price" is incorporated into their pricing. As an example, a permit price of $20 would result in an increase of 16% in the retail price of electricity and 9% in the retail price of gas. The Government has made a commitment to help households adjust to the scheme, including increasing benefits and other measures through the tax system.

Worldwide, there are a variety of emission trading schemes in operation. The largest of these is the European Union Emissions Trading Scheme. An overview of these schemes is presented, followed by more detailed case studies of the European, New Zealand and Canadian schemes.

From 2000 to 2006 Australia's emissions increased by 4%. A target proposed by the Garnaut Review would require Australia to cut its emissions by 80% by 2050 on 2000 levels. It is clear that to achieve this level of cuts will require a paradigm shift in policy. The Government's proposals for emissions trading under a Carbon Pollution Reduction Scheme are intended to create that new paradigm.

1.0 INTRODUCTION

Australia's existing international commitments as a party to the Kyoto Protocol oblige it to limit greenhouse gas emissions to no more than 108 per cent of 1990 levels during the Kyoto commitment period (2008 to 2012). Australia is currently on-track to meet this target. Post-2012 targets for developed countries are being negotiated internationally, and are scheduled to be concluded at a meeting in Copenhagen in December 2009.

The Commonwealth Government has adopted a long-term greenhouse gas emission reduction target of 60 per cent below 2000 levels by 2050, and is considering the scale and timing of the emission reductions Australia should pursue towards this goal. The Garnaut Review has advised the Government on three possible emission reduction targets depending on the outcome of international negotiations:

- a 25% cut by 2020 and a 90% cut by 2050 on 2000 levels if there is an ambitious international agreement to cut emissions.
- a 10% cut by 2020 and an 80% cut by 2050 on 2000 levels if there is a less ambitious agreement to cut emissions.
- a 5% cut by 2020 on 2000 levels which is in line with the Governments existing 2050 target if there is no international agreement. [1]

The Government has said that it will announce a medium-term target for Australian emission reductions up to 2020 later in 2008 in a White Paper on the emissions trading scheme.

The Government has stated that it will introduce a carbon emission trading scheme in 2010 as the primary mechanism to achieve its emission reduction targets. The outcome of international negotiations will therefore have a major bearing on the scheme, and the cost of implementing it on Australian businesses and households.

One commentator has stated that for many firms, and the economy as a whole, the current cost of investment uncertainty due to the lack of a carbon price is greater than the cost of climate change or mitigation efforts.[2]

This paper looks at Australia's current and projected greenhouse gas emissions. It describes international action to date to limit emissions and considers the prospects for a new agreement in 2009. The rationale of using economic instruments to control pollution is explained, and the paper continues with a description of Government proposals to introduce emissions trading in Australia. It then reviews emissions trading schemes which have been introduced in other countries in recent years.

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1 Garnaut Climate Change Review. *Final Report – Chapter 12.* September 2008. http://www.garnautreview.org.au/pdf/Garnaut_Chapter12.pdf

2 Collins, A. *The Shape of things to come.* Energy Risk, September 2008. http://www.asx.com.au/products/pdf/australian_carbon_pollution_reduction_scheme.pdf

2.0 AUSTRALIA'S GREENHOUSE GAS EMISSIONS

There are six types of greenhouse gases covered by the United Nations Framework Convention on Climate Change (UNFCCC). These are: carbon dioxide; methane; nitrous oxide; sulphur hexafluoride; hydrofluorocarbons and perfluocarbons. Under the Convention, parties report annually on their national emissions. Emissions are converted to carbon dioxide equivalents (CO2 –e), based on the global warming potential of the gas, ie, the amount of heat it traps in the upper atmosphere relative to carbon dioxide. The latest Australian inventory report published in June 2008 contains data on emissions in 2006. The report shows that:

- Australia's net greenhouse gas emissions across all sectors totalled 576 million tonnes of carbon dioxide equivalent (Mt CO2-e) in 2006.
- Emissions in 2006 were 4.2% above 1990 levels (the baseline year for measuring current international commitments to reduce greenhouse gas emissions).
- The greenhouse gas emissions intensity of the Australian economy, expressed as emissions per dollar of GDP, has declined over the period 1990 to 2006 by 37.3% from 1.0 to 0.6 kg CO2-e / $GDP.
- Australia has reduced its emissions per capita over the period 1990 to 2006 by 13.8% from 32.6 to 28.1 tonnes CO2-e.
- Australia's share of world emissions was around 1½ per cent in 2006.
- Estimates based on preliminary data suggest emissions in 2007 were 585 Mt, an increase of 6% on 1990 levels. [3]

Table 1 shows Australian emissions by sector for 2006 compared to 1990. It shows that net emissions increased four percent over the period. However, excluding Land Use Change and Forestry, which was a major sink over the period, emissions increased by 29%. Emissions from stationary energy, principally power stations, increased 47% over the 16 year period.

Table 1: Australian Greenhouse Gas Emissions (Mt CO2-e) 1990 and 2006

	1990	**2006**	**% change 1990 - 2006**
Energy *of which*	286.4	400.9	40
- Stationary Energy	*195.1*	*287.4*	*47*
- Transport	*62.1*	*79.1*	*27*
- Fugitive Emissions	*29.2*	*34.5*	*18*
Industrial Processes	24.1	28.4	18
Agriculture	86.8	90.1	4
Waste	18.8	16.6	-11
Land Use Change and Forestry	136.5	39.9	-71
Net Emissions	**552.6**	**576**	**4**

[3] Department of Climate Change. *National Greenhouse Gas Inventory 2006.* June 2008 http://www.climatechange.gov.au/inventory/2006/pubs/inventory2006.pdf

State greenhouse gas inventories are also published to coincide with the publication of the national inventory[4]. The most recent state inventory contains data for 2006 and shows that:

- NSW emitted 160 Mt CO2-e in 2006, 28% of the national total. In 1990 NSW emissions were 29% of the national total.
- Emissions in NSW have been stable over the period 1990-2006 at around 160Mt CO2-e
- The emissions intensity of the New South Wales economy has improved since 1990, from 0.8 kg to 0.5 kg CO2-e per dollar of Gross State Product (GSP).
- Emissions per capita in NSW in 2006 were lower than the national average at 23.5 tonnes CO2-e, declining from 27 tonnes per capita in 1990.

Table 2 shows emissions in NSW by sector in 2006 compared to 1990.

Table 2: New South Wales Greenhouse Gas Emissions (Mt CO2-e) 1990 and 2006

	1990	**2006**	**% change 1990 - 2006**
Energy *of which*	93.9	115.5	23.0
- Stationary Energy	*59.9*	*77.9*	*30.1*
- Transport	*18.5*	*21.9*	*18.4*
- Fugitive Emissions	*15.5*	*15.8*	*1.9*
Industrial Processes	12.5	11.4	-8.8
Agriculture	22.9	18.2	-20.5
Waste	6	5.8	-3.3
Land Use Change and Forestry	25.1	9.8	-61.0
Net Emissions	**160.4**	**160.0**	**-0.2**

Projections of future emissions

Australia's greenhouse gas emissions are projected to reach 599 million tonnes annually (Mt CO2-e) over 2008-12, which is 108% of the 1990 level. This is the nation's Kyoto Protocol target. Under a "business as usual" scenario without action to reduce emissions growth, if Australian emissions had followed the same trend since 1990 they would have reached 124% of 1990 levels by 2008-12. By 2020, emissions are projected to reach 120% of the 1990 level. Under the "business as usual" scenario emissions would have reached 815 million tonnes (Mt CO2-e) by 2020, 147% of 1990 levels.[5]

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4 Department of Climate Change. *State and Territory Greenhouse Gas Inventories 2006.* June 2008 http://www.climatechange.gov.au/inventory/stateinv/pubs/states2006.pdf

5 Department of Climate Change. *Tracking to the target – Australia's Greenhouse Emissions Trends 1990 to 2008-12 and 2020.* February 2008 http://www.climatechange.gov.au/projections/pubs/tracking2007.pdf

3.0 THE INTERNATIONAL CLIMATE CHANGE FRAMEWORK

The lead 'international law' in the field of climate change is the United Nations Framework Convention on Climate Change (UNFCCC). The Convention was adopted on 9 May 1992, and entered into force on 21 March 1994. Australia signed the Convention in June 1992 and was the ninth country to ratify the Convention in December 1992.[6]

The ultimate objective of the Convention is "to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." The Convention enjoys near universal membership, having been ratified by 192 countries.[7]

3.1 Dangerous Anthropogenic Climate Change

The Convention does not define 'dangerous interference with the climate system'. The European Union has argued that global mean warming should not be allowed to exceed 2^{o}C from pre-industrial levels. Since then, the global mean temperature has already increased 0.8^{o}C. The science of converting global carbon emission pathways with temperature projections to 2100 is complex. The global mean atmospheric concentration of CO_2 has increased from a pre-industrial concentration of about 289 parts per million (ppm) to 379 ppm in 2005.

The Garnaut Review concluded that by the end of the century:

- With no mitigation global average temperature will reach 5.6^{o}C above pre-industrial levels;
- With a CO_2 concentration of 550 ppm global average temperature will be 2.5 ^{o}C higher than pre-industrial levels;
- With a CO_2 concentration of 450 ppm global average temperature will be 2.1^{o}C higher than pre-industrial levels.[8]

These are the 'best estimate' temperature projections for the CO_2 concentration levels. The 'worst case' projection for the 550 ppm is 3.3 ^{o}C higher temperatures and 2.7 ^{o}C warmer for 450 ppm.

To give some context to what these scenarios mean, Table 3 overleaf shows some some of the predicted impacts on Australia under each scenario reported by the Review:

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6 Commonwealth of Australia, *Climate Change. Australia's Second Report under the United Nations Framework Convention on Climate Change*. November 1997.

7 See website provided by the United Nations Framework Convention on Climate Change: http://unfccc.int/essential_background/convention/items/2627.php

8 Garnaut Climate Change Review. *Final Report – Chapter 4.* September 2008.

Table 3: Projected impacts on Australia in 2100 of different atmospheric greenhouse gas concentration scenarios

	No Mitigation	**550 ppm CO2-e**	**450 ppm CO2-e**
Irrigated agriculture in the Murray Darling Basin	92% decline	20% decline	6% decline
Great Barrier Reef	Catastrophic destruction. GBR no longer dominated by corals	Disappearance of the reef as we know it with high impact to reef based tourism.	Mass bleaching of coral twice as common as today
Snow based tourism	Snow based tourism in Australia likely to have disappeared	Moderate increase in artificial snowmaking	
Water supply infrastructure	Up to 34% increase in the cost of supplying urban water, due to supplementation of urban water systems with alternative water sources	Up to 5% increase in the cost of supplying urban water.	Up to 4% increase in cost of supplying urban water
Buildings in coastal settlements	Significant risk from storm events and sea level rise, leading to localised coastal and flsh flooding and extreme wind damage	Significantly less storm energy in the climate system and in turn reduced risk to coastal buildings from storm damage	Substantially less energy in the climate system and in turn greatly reduced risk to coastal buildings from storm damage
Temperature related death	Over 4,000 additional heat related deaths in Queensland each year	Fewer than 80 additional heat-related deaths in Queensland each year	Fewer deaths in Queensland than at present because of slight warming leading to decline in cold related deaths
Geopolitical stability in the Asia-Pacific region	Sea level rise beginning to cause major dislocation in coastal megacities in Asia, and displacement of people in islands adjacent to Australia	Substantially lower sea-level rise anticipated and in turn greatly reduced risk to low-lying populations. Displacement of people in small island countries of South Pacific.	

Source: Garnaut Climate Change Review – *Final Report*, Table 6.3. p.128 http://www.garnautreview.org.au/pdf/Garnaut_Chapter6.pdf

3.2 The Kyoto Protocol

Since the adoption of the Convention, Parties have continued to negotiate to advance its implementation. These negotiations resulted in the adoption of the Kyoto Protocol in December 1997. The Kyoto Protocol established mandatory targets for greenhouse gas emissions for 38 developed countries, so-called Annex 1 Parties, relative to a 1990 base year.[9] Australia successfully argued that targets should be allocated on the basis of equality

[9] Hill, R "The international climate change agreement: An evolution" in *UNSW Law Journal*, Vol 7 No 2 July 2001. Senator Hon Robert Hill, Minister for the Environment and Heritage.

of effort, which led to differentiated targets. Hence the target for Australia for its average annual emissions for 2008-12 is 108% of 1990 levels. The other developed countries with targets either at or above the 1990 base included: Iceland (110%); New Zealand (100%); Norway (101%); Russian Federation (100%); and the Ukraine (100%). Other countries' targets range from 92 percent to 95 percent, with the majority committed to a 92 percent target.[10]

The Kyoto Protocol came into force on 16 February 2005. As of 13 May 2008, 181 countries and one regional organization (the EU) have deposited instruments of ratification, accession, approval or acceptance of the protocol.[11] The first act of the newly elected Rudd Government was to ratify the Kyoto Protocol. Prime Minister Kevin Rudd signed the instrument of ratification on the 3 December 2007, and the ratification entered into force on the 11 March 2008.[12] This commits Australia to meeting its target to keep emissions at 108% of 1990 levels from 2008-12. Australia's ratification means that the United States is the only Annex 1 Party not to have ratified it.

The Kyoto Protocol requires countries to meet their targets primarily through domestic action. To supplement domestic action the Kyoto Protocol establishes three 'flexibility mechanisms' to help cut the cost of meeting emission targets. The three Kyoto mechanisms are:

- The Clean Development Mechanism (CDM) which enables Annex 1 parties (and their approved organisations, which can include private companies) to undertake projects to reduce emissions in developing countries and to receive emissions credits in return.
- The Joint Implementation Mechanism allows Annex 1 parties (and their approved organisations) to undertake projects to reduce emissions in other Annex 1 parties.
- International Emission Trading: provides for Parties to acquire emissions credits from other Parties and use them towards meeting their emissions targets under the Kyoto Protocol. This enables Parties to make use of international opportunities to reduce emissions at a lower cost.

The rationale behind these three mechanisms is that greenhouse gas emissions are a global problem and that the place where reductions are achieved is of relatively less importance.

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10 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Annex B.

11 Developing countries can be signatories to the Protocol, but legally binding targets do not apply to them. United Nations Framework Convention on Climate Change, *Status of Ratification*. See: http://unfccc.int/kyoto_protocol/background/status_of_ratification/items/2613.php

12 Minister for Environment and Climate Change. *Its official, Australia is now a part of the Kyoto Protocol.* Media Release 11 March 2008. http://www.environment.gov.au/minister/wong/2008/pubs/mr20080311.pdf

3.2.1 Progress In Meeting Kyoto Targets

The Annex 1 Parties to the Kyoto Protocol submit annual emissions reports to the UNFCC.[13] These reports show mixed progress against Kyoto obligations, as reported below.

- **Australia:** emissions in 2006 were 104% of 1990 levels, so it is on track to meet its target of restricting emissions to 108% of 1990 levels;
- **EU:** 16 Member States had achieved an emissions reduction compared to 1990 levels, while emissions had increased in 11 Member States. The group of 15 EU countries that have a target under Kyoto of reducing emissions by 8% on 1990 levels had achieved a reduction of 5% by 2006.[14] The European Commission considers that the EU is on track to meet its Kyoto obligations.[15]
- **Japan:** emissions in 2006 were six percent higher in 2006 compared to 1990. Japan's target is to reduce emissions by six per cent.[16]
- **Canada**: emissions for 2006 were 29% above its Kyoto target.[17] Canada has acknowledged that it will not be able to meet its Kyoto obligations.[18] The Canadian Government has adopted an alternative target of reducing Canada's emissions by 20% on 2006 levels by 2020.[19]
- **New Zealand**: emissions in 2006 were one-third higher than in 1990.[20] New Zealand's Kyoto Protocol target is to maintain emissions at 1990 levels.

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13 The reports are available from the following website: http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4303.php

14 Including emissions from Land Use Change, Land Use and Forestry (LULUCF). Excluding LULUCF the EU 15 have achieved a reduction of 2.7% on 1990 levels. The EU 15 are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK

15 European Commission. *Climate change: Commission welcomes further progress towards meeting EU's Kyoto Protocol target.* News Release. 18 June 2008. http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/965&format=HTML&aged=0&language=EN&guiLanguage=en The announcement has figures excluding LULUCF. Emissions including LULUCF are available from the European Environment Agency: http://reports.eea.europa.eu/technical_report_2008_6/en

16 Greenhouse Gas Inventory Office of Japan. *The GHG Emissions Data of Japan 1990-2006.* July 2008. http://www-gio.nies.go.jp/aboutghg/nir/nir-e.html

17 Environment Canada. *Canada's 2006 Greenhouse Gas Inventory*. http://www.ec.gc.ca/pdb/ghg/inventory_report/2006/som-sum_eng.cfm

18 Government of Canada. *Speech from the Throne. Strong leadership. A Better Canada.* 16 October 2007.http://www.sft-ddt.gc.ca/eng/media.asp?id=1364

19 Environment Canada. *Turning the Corner: Regulatory Framework for Industrial Greenhouse Gas Emissions*. March 2008. http://www.ec.gc.ca/doc/virage-corner/2008-03/541_eng.htm#introduction

20 Ministry for the Environment. *New Zealand's Greenhouse Gas Inventory 1990-2006* , Table 2.3.1. April 2008. http://www.mfe.govt.nz/publications/climate/nz-greenhouse-gas-inventory-apr08/html/page4.html

- **Russia**: reduced its emissions by 29% compared to its Kyoto baseline. Russia had undertaken to maintain emissions at 1990 levels, and so it is comfortably within its Kyoto targets.
- **United States**: emissions in 2006 were 115% of 1990 levels, in excess of the target it would have been subject to had it agreed to ratify the Kyoto Protocol, of 107% of 1990 levels.[21]

The UNFCCC secretariat will publish a report on the performance of Annex 1 parties against their Kyoto targets in November 2008.[22]

3.3 International Negotiations On Further Emission Reductions Post 2012

The outcome of these negotiations on Kyoto post 2012 will have major ramifications for the Australian Carbon Pollution Reduction Scheme. This section briefly reviews these negotiations.

The international community recognised that the Kyoto Protocol was a first step towards reducing greenhouse gas emissions. Even if all the Parties were to meet their obligations, it would not be enough to achieve the stablisation of greenhouse gas concentrations in the atmosphere which is the objective of the UNFCCC.

The Conference of the Parties (COP) is the decision-making authority of the UNFCCC. The three main issues to be decided are:

- The extent of future restrictions to be agreed;
- Which countries will commit to binding restrictions on their emissions;
- To what extent there will be differentiation in the level of restrictions, to account for factors such as population growth and differing abilities to reduce emissions.

The next important meeting is the COP 14 Conference which is to be held in Posnan, Poland in December 2008. It is hoped that the negotiations will conclude at the COP15 in Copenhagen in December 2009, with a view to agreeing on the way forward post-2012.

There are some signs of an emerging consensus that a long term target could be set to reduce emissions to 50% of 1990 levels by 2050. The G8 meeting in Japan in July 2008 said in its communique that:

> We seek to share with all Parties to the UNFCCC the vision of, and together with them to consider and adopt in the UNFCCC negotiations, the goal of achieving at least 50% reduction of global emissions by 2050, recognizing that this global challenge can only

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21 US Environment Protection Agency. *Inventory of US Greenhouse Gas Emissions and Sinks. 1990-2006.* April 2008. http://www.epa.gov/climatechange/emissions/usinventoryreport.html

22 UNFCCC. *Compilation and accounting reports.* This page will provide access to annual compilation and accounting (C&A) reports under the Kyoto Protocol. A report by the UNFCCC secretariat, is scheduled for November 2008. http://unfccc.int/ghg_data/kp_data_unfccc/compilation_and_accounting_reports/items/4358.php

> be met by a global response, in particular, by the contributions from all major economies, consistent with the principle of common but differentiated responsibilities and respective capabilities.[23]

A meeting of major world economies[24] was held in parrallel with the G8 meeting. The communique arising out of that meeting does not mention a specific target for emissions reductions, with press reports suggesting that the five leading developing countries of China, India, Brazil, Mexico and South Africa had rejected the G8's vision of a 50% emissions cut by 2050.[25]

3.3.1 The Stated Commitments of Member States

The United States Commitment

As noted above, the United States has not ratified the Kyoto Protocol. However, the approach of the President elect Barack Obama is likely to be different to the previous Administration. Both Presidential candidates in the November 2008 election supported the adoption of a cap and trade emissions trading scheme in the US. Barack Obama has pledged an 80% reduction on 1990 emission levels by 2050, and to reduce emissions to 1990 levels by 2020.[26]

European Commitments

The EU's 27 Member States have committed to cutting greenhouse gas emissions by 30% on 1990 levels by 2020 provided other developed countries commit to making comparable reductions under a global agreement. They have also committed to cutting emissions by at least 20% irrespective of what other countries decide to do.

Some European Countries have made separate national commitments. The UK has committed itself to reducing emissions by 20% on 1990 levels by 2010 and 80% by 2050. Germany has committed to a 40% reduction on 1990 levels by 2020, and Norway to a 30% reduction on 1990 levels by 2020 and to carbon neutrality by 2050. [27]

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23 G8 *Hokkaido Toyako Summit Leaders Declaration, para 23.* 8 July 2008. http://www.g8summit.go.jp/eng/doc/doc080714__en.html

24 Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, Russia, South Africa, the United Kingdom, and the United States

25 The Age. *China, India snub world on targets*. July 10 2008. http://www.theage.com.au/national/china-india-snub-world-on-targets-20080709-3clb.html

26 Barack Obama. *Barack Obama and Joe Biden on the environment.* 2008 http://www.barackobama.com/pdf/issues/EnvironmentFactSheet.pdf

27 Department of Energy and Climate Change. *UK leads world with commitment to cut emissions by 80% by 2050.* 16 October 2008. http://nds.coi.gov.uk/environment/fullDetail.asp?ReleaseID=381477&NewsAreaID=2&NavigatedFromDepartment=False

Federal Environment Ministry. *General Information on Climate Change.* August 2008. http://www.bmu.de/english/climate/general_information/doc/4311.php

Australian Commitment

The Australian Government has set a long-term target of reducing Australia's emissions to 60% of 2000 levels by 2050, but it has not yet made public its position on the timing of cuts to deliver that reduction. It has said it will do that when it publishes a White Paper on the emissions trading scheme in December 2008.[28]

The Garnaut Review Recommendation

The final report of the Garnaut Climate Change Review considered the prospect for achieving an agreement to cut emissions post-2012 in detail. This is described in Appendix One.

Garnaut proposed that the allocation of emissions entitlements should gradually move towards a per capita basis over time, a so-called contraction and convergence approach. The ideological basis of this approach is that every person has an equal right to pollute the atmosphere. This would see emissions in all countries converging around a global average, which would also reduce over time, from around 6 tonnes CO_2 equivalent now, to around 3 tonnes by 2050. While developed countries would face steep cuts in their emissions, developing countries would be allowed some headroom to continue to increase emissions from their current low per capita levels.

Table 4: The Garnaut Review: Change in emissions by 2020 and 2050 relative to 2000 under different atmospheric greenhouse gas concentration scenarios

	550 ppm CO2 -e		450 ppm CO2-e	
	2020	**2050**	**2020**	**2050**
World	40	-13	29	-50
Developed Countries	-15	-76	-31	-86
Australia	-10	-80	-25	-90
Canada	-33	-80	-45	-89
EU25	-14	-69	-30	-82
Japan	-27	-75	-41	-86
USA	-12	-81	-28	-89
Developing Countries	91	50	85	-14
China	210	-4	195	-45
India	98	230	97	90

Source: Garnaut Climate Change Review, *Final Report – Chapter 9*. September 2008. http://www.garnautreview.org.au/pdf/Garnaut_Chapter9.pdf, Table 9.2, p 209

Based on this assessment, the Review proposed three levels of Australian emission reductions, depending on what is agreed at the negotiations in 2009:

- An agreement on the 450ppm path is in the nation's interests. Therefore Australia should announce that it is prepared to reduce emissions by 25% by 2020 and 90%

Ministry of the Environment. *Climate Change Policy in Norway.* February 2008. http://www.regjeringen.no/en/dep/md/About-the-Ministry/minister-of-the-environment-and-developm/Speeches-and-articles/2008/climate-change-policy-in-norway.html?id=499623

[28] Department for Climate Change. *Carbon Pollution Reduction Scheme – Green Paper - Summary.* July 2008. http://www.climatechange.gov.au/greenpaper/report/index.html

by 2050 (based on 2000 levels) if there is effective agreement at this level;

- If a comprehensive global agreement to limit carbon dioxide levels in the atmosphere to below 550ppm can not be achieved, Australia should agree to a target of reducing emissions by 10% on 2000 levels by 2020, and reduce emissions by 80% by 2050;
- In the absence of such an agreement, Australia should commit to reducing emissions from 2000 levels by 5% from 2020, which is consistent with the Government's target of reducing emissions by 60% on 2000 levels by 2050.

Whatever the outcome of the international negotiations, they will have a major bearing on the future of greenhouse gas emissions in Australia over the longer term. The impact of these negotiations in the context of the Commonwealth Government's proposals for emissions trading in Australia under a Carbon Pollution Reduction Scheme is described in Chapter 4.

4.0 ECONOMIC INSTRUMENTS TO CONTROL POLLUTION

If Australia and the world are to cut greenhouse gas emissions by up to 90% by 2050, there are two fundamental approaches. These are the regulatory approach and the economic instruments approach. Traditionally, regulatory instruments have been used to control pollution. The drive for economic efficiency, the unresponsive nature of regulations, and the difficulty of regulating diffuse pollution sources has led to the development of economic instruments to protect the environment.

There are two main categories of economic instruments: those that create property rights to environmental resources and those that act on prices (eg taxes). Many economists argue that the use of these instruments will lower the marginal cost of pollution abatement compared to regulation.[29]

The property rights approach aims to provide incentives for individuals to conserve their environment by clarifying their rights to and responsibilities for common property.[30] This would work towards satisfying one of the tenets of the perfect market, clearly defined property rights that are enforceable. One way to do this is to create a system of tradeable permits.

A carbon tax would control the price of emissions and leave it to the market to control the quantity. In contrast, tradeable permits are quotas, allowances or ceilings on pollution emission levels of specified polluters that, once allocated by the appropriate authority, can be traded subject to a set of prescribed rules. If the firm wishes to expand production, then they must either invest in pollution control equipment or purchase more permits. Firms which choose to emit less than their allowance may sell their surplus permit to other firms or use them to offset excess emissions in other parts of the plant.[31]

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29 The marginal cost is the cost of one extra unit of pollution control.

30 Bureau of Industry Economics, *Environmental regulation: The economics of tradeable permits - a survey of theory and practice*. Research Report No 42, 1992, p 8.

31 Bureau of Industry Economics, *Environmental regulation: The economics of tradeable permits - a survey of theory and practice*. Research Report No 42, 1992, at 9.

The idea is that creating a market and placing a value on permits creates an incentive for those businesses which can reduce their emissions most cheaply to do so first, meaning that the cost of reducing emissions is kept to a minimum.

Hence a 'cap and trade' greenhouse gas emissions trading scheme would have the following elements:

- greenhouse gas emissions are capped at some level in each period;
- permits to emit greenhouse gases are issued for each period;
- there is a penalty for non-compliance which underpins a value for emissions;
- participants can trade emission permits among themselves.

One of the strengths of an emissions trading scheme is that it is technology neutral. It allows the market to seek out the lowest cost to comply with any particular emissions cap.[32]

The Garnaut Review warned that a poorly designed emissions trading scheme would put at risk the environmental effectiveness and the economic efficiency benefits that were the reason for establishing an emissions market. The superiority of an emissions trading scheme over a carbon tax depends on the former's good design. Garnaut concluded that for Australia, a well-designed emissions trading scheme is superior to a carbon tax, whilst the latter is superior to a poorly designed emissions trading scheme.[33]

5.0 EMISSIONS TRADING IN AUSTRALIA

5.1 Background

The publication of a Green Paper by the Commonwealth Government on 16 July 2008 marks the latest stage in the introduction of an emissions trading scheme which has been under consideration for the last several years. Important developments prior to the publication of the Green Paper were:

- The National Emissions Trading Taskforce (NETT) - established by state and territory governments in 2004 to develop a model for a national emissions trading scheme. The NETT's final report was delivered to state and territory governments in December 2007.[34]
- The Task Group on Emission Trading (TGET) - was established in December 2006 by the Howard Government to advise on the nature and design of a workable global emissions trading system in which Australia would be able to participate; and to report on additional steps that might be taken in Australia consistent with the goal of establishing such a system. The Task Group's final report was published in June 2007.[35]

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32 National Emissions Trading Taskforce, *A Possible Design for a National Greenhouse Gas Emissions Trading Scheme*. August 2006.

33 Garnaut Climate Change Review. *Final Report - Chapter 13.2.3.* September 2008. http://www.garnautreview.org.au/index.htm

34 National Emissions Trading Taskforce. *Possible design for a national greenhouse gas emissions trading scheme: Final framework report on scheme design*. December 2007 http://www.climatechange.gov.au/emissionstrading/index.html

35 Prime Ministerial Task Group on Emissions Trading. *Report.* June 2007.

- The Garnaut Climate Change Review is an independent study by Professor Ross Garnaut, which was commissioned by Australia's Commonwealth, state and territory governments, and was established on 30 April 2007. The Review released an Emissions Trading Discussion Paper on 20 March 2008, putting forward a set of proposals for an emissions trading scheme[36]. The Review's recommendations on a scheme are included in its final report published on 30 September 2008.

This section of the paper considers the main features of the emissions trading scheme proposed by the Commonwealth Government in its Green Paper, reactions to those proposals, and the consideration of these issues by the Garnaut Review.

5.2 The Commonwealth Carbon Pollution Reduction Scheme

The Carbon Pollution Reduction Scheme (CPRS) will be the Government's primary policy instrument to reduce greenhouse gas emissions. The basis of the CPRS is a cap and trade emissions trading scheme. Under this model, a limit, the cap, is set on the total amount of emissions allowed in a given time period for the gases and sectors of the economy covered by the scheme.

The Business Council of Australia has noted: "the design, passage and implementation of the CPRS will be the single most important decision that the Rudd Government will take".[37] Exxon Mobil commented that:

> The Australian ETS framework, as outlined in the Australian Government's Green Paper, is the most complex and broad based GHG regulatory regime of its kind to be put forward by government anywhere in the world. The proposed Australian ETS will be the first scheme to cover all greenhouse gases; include transport fuels, natural gas, waste and fugitive emissions; and to move to auctioning of permits at scheme start up.[38]

5.3 When To Introduce The Scheme?

The Australian Government intends to commence the Carbon Pollution Reduction Scheme in 2010. The international community has indicated its intention to achieve an agreement on a replacement for Kyoto in 2009, but this is not guaranteed. The Garnaut Review

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http://pandora.nla.gov.au/pan/79623/20071127-1411/www.dpmc.gov.au/publications/emissions/docs/emissions_trading_report.rtf

36 Garnaut Climate Change Review. *Final Report.* September 2008. http://www.garnautreview.org.au/index.htm

37 Business Council of Australia, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0812-business-council-of-australia.pdf

38 Exxon Mobil, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0254-exxonmobil-australia.pdf

cautioned against introducing a scheme while negotiations were still ongoing:

> There would be considerable benefit in avoiding the unproductive interaction between the early period of a new trading system and Australia's participation in crucial global negotiations. Otherwise, this period will be one in which every new development in the international negotiations, encouraging or adverse, could have a disproportionate and unhelpful effect on the domestic permit price in an unconstrained market.[39]

The Review suggested that the risk arising from uncertainty about the post-Kyoto international agreement could be ameliorated by fixing the price of permits at the time of the scheme's commencement.

WWF Australia noted that unless the Government adopts an ambitious medium-term target to reduce emissions, it should consider deferring decisions on the emissions trading scheme until after the UN Climate Change Conference in Copenhagen in December 2009: "weak targets may undermine international negotiations and, if the negotiations resulted in more ambitious targets, weak targets might expose the Australian public to compensation for polluters." The Australian Greenhouse Industry Network, which represents a cross section of Australian businesses and industry associations, did not support the adoption of a medium-term target by Australia in advance of an international agreement.

Noting the intended 2010 commencement of the Scheme, Exxon Mobil commented:

> …the schedule for implementation of an Australian ETS represents one of the most aggressive timetables ever contemplated - with all legislative and regulatory instruments to give effect to the scheme and its new regulators, as well as the required business upgrades in hardware and processes, to be achieved within a 2 year timeframe. It should be noted that the EU commenced planning for an ETS in 2000 and continued planning for five years before then implementing a "trial" system that went for a further three years. Even with the lesser scope (CO_2 emissions from large stationary sources only) compared to the Green Paper and the level of planning, the EU experienced significant difficulties in implementation.[40]

The Green Paper recognises the uncertainty about developments post 2012, and the possibility that the Government might commit to greater reductions than had been set for the emission trading scheme. The Government considers that the risk of this is small, because domestic commitments will be taken into account in the Government's negotiating position, and because the Government proposes to set the cap up to 2015. Therefore unless international commitments had to be met before then, which is unlikely, they could be met by reducing the cap post 2015. In the event that there is a shortfall between the emissions

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39 Garnaut Climate Change Review. *Final Report – Chapter 14.* September 2008. http://www.garnautreview.org.au/pdf/Garnaut_Chapter14.pdf

40 Exxon Mobil, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0254-exxonmobil-australia.pdf

cap up to 2015, and what Australia is required to do under international commitments, the Government says it will make this up by buying international emission units.

5.4 Emission Caps

4.4.1 Scheme coverage and point of application

The first essential element of a cap and trade scheme is that aggregate emissions are capped. Since there are several different types of greenhouse gases and many different sources of emissions across the economy, a decision must be taken as to which greenhouse gases and sources of emissions are to be subject to the cap. This choice is referred to as the coverage of the scheme.

5.4.2 Gases

The Kyoto Protocol applies to six types of greenhouse gas: carbon dioxide; methane; nitrous oxide; sulphur hexafluoride; hydrofluorocarbons and perfluocarbons. The Garnaut Review and the Green Paper both propose that the emissions trading scheme should cover emissions of all of these gases.

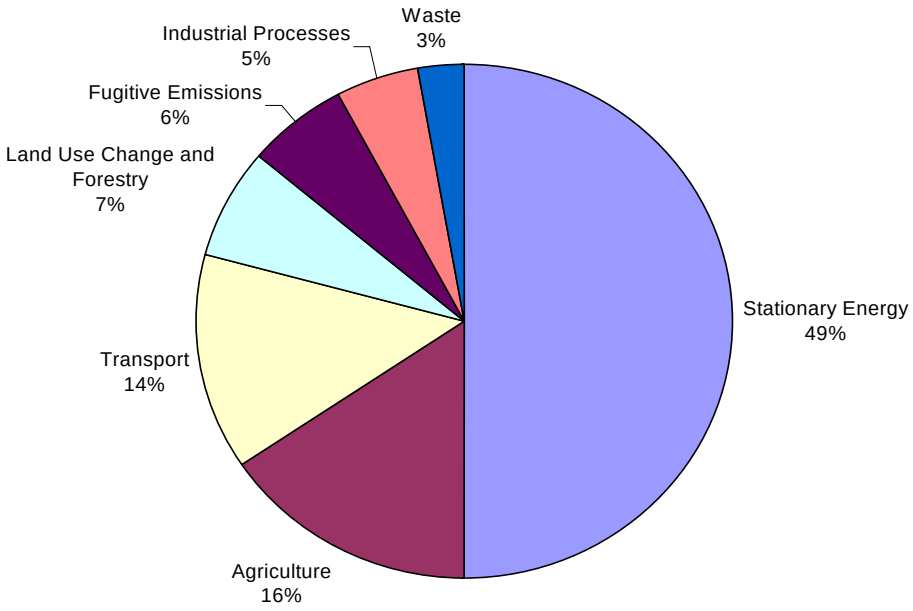
5.4.3 Threshold

Under the *National Greenhouse and Energy Reporting Act 2007*, facilities which emit more than 25,000 tonnes of greenhouse gases (CO_2 equivalent) are obliged to report their emissions starting in the 2008-09 financial year. The Government proposes to use the same threshold for participation in the emissions trading scheme.

5.4.4 Sectoral coverage

The international accounting rules for reporting emissions identify seven sectors. The shares of each sector in Australia's emissions is shown in Figure 1.

Figure 1: 2006 Australian Sectoral Emissions



The Government proposes that five of the seven sectors should be included in the scheme

from 2010: stationary energy; transport; fugitive emissions; industrial processes; and waste. Together, these represent 77 percent of Australia's greenhouse gas emissions.

The Australian Coal Association argued against the inclusion of fugitive emissions because these cannot be accurately measured at the moment. They explained that the current method for measuring fugitive emissions used state averages which would unfairly penalise mines whose emissions were below average.[41]

The Government proposes that agriculture would be initially excluded from the scheme. Australia has more than 100,000 agricultural businesses, most of whom emit less than 1,000 tonnes of CO_2 equivalent per year, well under the threshold proposed for including other businesses in the scheme.

The scheme could be applied at a different point in the supply chain, e.g. to food processors such as abattoirs or mills. However, emissions from farms are highly variable in response to management and climate. For example, cattle breeds and feed types in tropical or subtropical areas differ from those in temperate areas and have different levels of emissions. There is therefore a weak link between emissions on farm and upstream and downstream points in the supply chain, which could mask carbon price signals. The science on measuring agricultural emissions also continues to develop. For these reasons the government intends to give further consideration as to whether and how to include agriculture in the scheme, although at this stage it is inclined to do so. It will take a final decision on this by 2013, with a view to applying the scheme to agriculture from 2015.

The National Farmers Federation agreed that it is not practical to include agriculture in the scheme at this time. However, the Federation commented that the Government should decide now whether to include agriculture from 2013, and introduce complementary policies which rewarded farmers for cutting emissions while not part of the scheme. [42]

The other sector not fully covered by the scheme is Land Use Change and Forestry (LUCF). The Kyoto Protocol provides some choices in how LUCF emissions are counted. Australia's decision on what to include in the LUCF category was guided by the risk of significant emissions from drought and bushfires causing Australia's Kyoto commitments to be exceeded. The Government's preference is for the scheme to have the same sources and sinks as are counted in Australia's Kyoto account, so the scheme can be linked to other schemes internationally.

The fact that certain sectors would not be included in the emissions trading scheme does

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41 Australian Coal Association. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0530-australian-coal-association.pdf

42 National Farmers Federation, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0462-national-farmers-federation.pdf

not mean that they would not be expected to make a contribution towards meeting Australia's emissions targets. The Government intends that all sectors will make a contribution to reducing emissions. WWF Australia said that there should be a ban on land clearing, and the introduction of mandatory low-till cropping[43] to reduce emissions from uncovered sectors.[44]

5.4.5 Point of obligation

The Green Paper gives a clear explanation of how the point of obligation for participation in the scheme should be decided, and how it might vary between different sectors:

> The logical starting point for imposing scheme obligations is the point at which emissions are physically produced. Imposing scheme obligations directly on emitters ('direct obligation') creates the clearest possible incentives for emitters to undertake abatement action.
>
> However, in sectors with many small emitters, a direct approach to coverage would impose excessive compliance costs. … Moreover, as numbers of participants increase, it becomes not only costly but impractical to expect individual emitters to meet scheme obligations. For example, in the transport sector there are many millions of cars, which are sources of emissions.
>
> Adopting an emissions threshold to ensure that the scheme includes only large entities could introduce competitive distortions between entities above and below the relevant threshold, because scheme obligations would not apply to entities below the threshold. To achieve comprehensive coverage of all emissions in sectors with large numbers of small emitters, scheme obligations could be applied at another point along the supply chain ('indirect obligation'). For example, obligations for emissions from fuel consumption could be placed upstream on fuel suppliers, using proxies of direct, end-use emissions. Downstream emitters would face price effects on the fuels and other inputs they consume as the upstream carbon costs are passed down the fuel networks. This would provide incentives to reduce emissions by using fuels and other emissions-intensive goods more efficiently.[45]

In the transport sector, 90% of emissions come from road transport, and a large part of these from private cars. It would be very costly to apply the scheme to Australia's millions of private motorists. Applying the scheme to freight companies which emit over the 25kt threshold would only cover about 40% of transport emissions. The Government therefore proposes to place an upstream obligation on fuel suppliers. Since emission factors from transport fuels are well known, the Government expects there would be a transparent passing on of the carbon price signal in increased fuel prices. The effects on fuel prices are

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43 This means sowing crops without ploughing the soil, as carbon is emitted when the soil is exposed following ploughing

44 WWF Australia. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0522-wwf.pdf

45 Department for Climate Change. *Carbon Pollution Reduction Scheme – Green Paper – Chapter 2.3.1.* July 2008. http://www.climatechange.gov.au/greenpaper/report/index.html

expected to be limited in comparison to the effect of recent high oil prices. However, in recognition of the difficulties these have created the Government intends to cushion the effect of the scheme in the transport sector, with a corresponding cut in fuel duties. This would be reviewed after the first three years of operation of the scheme.

The Australian Conservation Foundation considered that the Government should not cut fuel duties, but should spend the money on public transport.[46] BP did not support the proposed offset either. It argued that it contravenes the goals of including transport fuels in the first place, and delays the onset of needed behavioural changes in that sector. BP suggested that the Government should make the effect of the introduction of emission trading more transparent to consumers by publishing an advisory fuel price illustrating what component of the pump price the carbon value represents.[47]

5.5 Setting The Cap And Trajectory

The limit on emissions, the cap, is the central feature of a cap and trade scheme. The level of the cap is critical because if it is set too high, and low permit prices result, there will be little incentive to reduce emissions. Conversely, setting the cap too low could impose excessive costs on industry. At the time of writing no firm decisions had been taken as to the scheme caps. The Government has announced that it will confirm a medium-term target for Australian emission reductions up to 2020 in a White Paper on the emissions trading scheme, to be released late in 2008. The following summarises what is known so far about possible caps and trajectories.

In the absence of an international agreement to reduce emissions post 2012, the main target informing the long-term objective of Australia's emissions is the Government's target to reduce them by 60% on 2000 levels by 2050.

However, it is apparent that this target is not adequate to avoid dangerous anthropomorphic climate change. For instance, an international agreement to achieve a 550ppm pathway would correspond to an 80% reduction in emissions by Australia by 2050, and a 450ppm pathway would correspond to a 90% reduction by 2050.[48]

The Garnaut review advises that a 5% cut in emissions by 2020 on 2000 levels would be consistent with the Government's target for 2050. A 550ppm pathway would mean a 10% cut in emissions by 2020, and a 450ppm pathway would mean a 25% cut in emissions by 2020.[49]

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46 Australian Conservation Foundation, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0809-australian-conservation-foundation.pdf

47 BP Australia. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0355-bp-australia.pdf

48 Garnaut Climate Change Review. *Final Report – Chapter 9.* September 2008.

49 Garnaut Climate Change Review. *Final Report – Chapter 12.* September 2008. http://www.garnautreview.org.au/pdf/Garnaut_Chapter12.pdf

The Australian Conservation Foundation (ACF) argued that the scheme cap to 2012-13 should reduce Australia's emissions to 5% below 1990 levels, corresponding to the average level of reductions undertaken by developed countries under the Kyoto protocol. Over the medium term, the ACF advocated a target to reduce emissions by 30% below 1990 levels by 2020, and by 40% if other developed countries agreed to do the same.[50]

The Australian Coal Association cautioned against Australia taking action ahead of its global competitors, on the basis that progress towards binding targets by developing countries was likely to be slow, this would be costly and without benefit to the climate.[51]

Exxon Mobil noted that as increased emissions resulting from economic growth would have to be accommodated within the scheme cap, the current proposals were far more aggressive in seeking emissions reductions than previous proposals and place significant penalties on attempts to expand emission intensive industries regardless of their energy efficiency.[52]

5.5.1 The emissions trajectory

It is possible to have two very different aggregate levels of emissions while still meeting the same end point target. Therefore, when targets are expressed as a fixed percentage point cut to be achieved by a point in time, the trajectory taken towards achieving the target is also important.

The Government has said that it will publish a national emissions trajectory. To account for the variability in emissions from year to year, the trajectory will be for five year periods. This will be updated every year by one year.

At commencement of the scheme, the Government will announce the annual scheme caps for five years. As with the national emissions trajectory these will be updated annually, so that in any one year the cap will be known for the following 5 years. This follows the advice given by the Garnaut Review. The TGET and NET reports called for longer-term certainty with caps to be set for 10 years or more at a time.

Reducing emissions will involve long-term investment decisions. The level of the cap in the scheme will be a major determinant of permit prices, and so the greater the certainty

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50 Australian Conservation Foundation. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0809-australian-conservation-foundation.pdf

51 Australian Coal Association. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0530-australian-coal-association.pdf

52 Exxon Mobil, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0254-exxonmobil-australia.pdf

about the level of the cap and hence permit prices over time, the less risk is involved in making long-term investments to cut emissions. The Government also intends to establish "gateways" or ranges, within which the scheme cap will be set over the medium term. These gateways will be set as an annual range for the 10 years following the last year of the scheme cap. The gateways would be extended by five years every five years, so that in any one year the gateway would be known for between five and ten years.

5.6 Creating A Market In Permits

5.6.1 Features of permits

Permits must be tradeable if there is to be a carbon market. Tradability requires securely defined property rights so investors can have confidence that they can enjoy the benefits of their investments. Investors are less likely to invest if property rights can be easily overturned or are ill defined.

The Government proposes that a permit would be called an Australian Emissions Unit. One permit would correspond to one tonne of CO2-e of greenhouse gas emissions. A permit would be personal property and would confer rights on its owner, the main right being to surrender it to meet scheme obligations or to transfer it. Permits would have a unique identification number, recorded in an electronic registry, and would be marked with the first year in which they could be surrendered (their "vintage"). Permits could not be extinguished i.e. cancelled by Government, without compensation. A permit could be held and traded by any natural or legal person. There would be no restriction on foreign ownership of permits, apart from any that applied under a law other than the scheme legislation.

5.6.2 Trading in permits

To trade in permits efficiently requires the creation of a market. As the Australian Securities Exchange has commented:

> The Australian Government will lay a solid foundation for Australia's ETS. In turn, the "invisible hand" within the financial markets will facilitate the price discovery, liquidity, risk transfer, settlement integrity and capital raising necessary to ensure that Australia is well-placed to adjust to and, in very real terms, benefit from the transition to a carbon-conscious economy.[53]

Over the counter (i.e. business to business) trades in emission rights has already begun in advance of the scheme being finalised.[54] An Australian Emissions Trading Units market began to operate in May 2008. As of September 2008 approximately 100,000 units (each representing 1tCO2-e) had been traded, with recent prices at $21.50 per unit.[55]

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53 Australian Securities Exchange. *ASX poised for role in greener world*. July 2008 http://www.asx.com.au/products/pdf/asx_poised_for_role_in_greener_world.pdf

54 Collins, A. *The Shape of things to come.* Energy Risk, September 2008. http://www.asx.com.au/products/pdf/australian_carbon_pollution_reduction_scheme.pdf

55 Energy Supply Association of Australia, National Generators Forum, Energy Retailers Association of Australia, Australian Pipeline Industry Association. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0715-esaa.pdf

As the Carbon Pollution Reduction Scheme is a market created by the government, certainty over future government policy affects investor confidence. For example, a continuing commitment to carbon reduction implies confidence about permit scarcity which drives investment decisions based on forward prices of permits.

As the creator of the market, the Government is the holder of information which will affect the future development of the market. In the Green Paper the Government sets out proposals for the way it will release information on key decisions, such as the scheme cap and trajectory, to the market so that these can be factored into the forward price of permits. In so doing the Government hopes to avoid situations like that which occurred in the EU Emissions Trading Scheme in early 2007. In this case, sudden awareness of the oversupply of permits in the first phase of the scheme caused the price to fall sharply and remain close to zero.

Permits would be financial products subject to the regulatory regime of the *Corporations Act 2001* on financial markets. The Government is also developing taxation and accounting rules for permits.

5.7 Price Cap

An emissions trading scheme controls the quantity of emissions and leaves the price to be determined by the market. A price cap is a commitment to increase the scheme cap if the market price of permits rises above a certain predetermined level. All emissions trading schemes require some form of penalty for non-compliance. If this penalty is in the form of a cash payment in lieu of surrendering permits then it will act as a price cap. The alternative to a price cap is to have a quantity limit with heavy penalties for non-compliance with scheme obligations. The EU emissions trading scheme has a price cap of €100, with a make good provision[56].

The main advantage of a cap is that it places an upper limit on permit prices, capping the cost of the scheme. The main disadvantage of a cap is that if it was set too low it would increase the risk that Australia might not meet its international emissions reduction obligations. In addition, it might compromise the international linking of the scheme with other schemes which have higher caps or are not capped.

The Government proposes in the Green Paper that there would be a price cap in the scheme from 2010-11 to 2014-15. No figure is put on the level of the cap but the Government says it would be set high enough above the expected permit price to ensure a very low probability of use.

Climate Action Network Australia argued that a price cap must be set sufficiently high to encourage scheme compliance, be well above the anticipated market price of permits, and increase over time.

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[56] This means that as well as paying the penalty for exceeding emissions caps, companies are liable to “repay” the amount of excess emissions in future years

BP does not support the use of a price cap where it is set to act as a "safety valve", as once the price cap is hit, the Government is obligated to issue permits, the volume of which has no limit, leading to a breach of the scheme emissions cap. BP recommended that a price cap be set high enough to act as a compliance penalty, and also noted the €100 cap in the EU scheme. BP suggested a package of four measures which would reduce the need for a price cap:

- Allowing domestic and international offsets to be used to meet scheme obligations;
- Allowing international trade in permits with other countries with emission caps;
- Unlimited banking of permits;
- Limited borrowing from future scheme years[57]

However, the Government does not propose to allow offsets to count against scheme obligations, and the scheme would not be linked internationally, at least initially. The Government's proposals for banking and borrowing of permits are described in the next section.

5.8 Banking And Borrowing Of Permits

There are three ways in which the scheme could allow flexibility in the timing of emissions reductions:

- Banking would allow permits issued in one year to be used in future years. This would reduce emissions in the current year while increasing future year emissions;
- Borrowing would allow permits from future years to be brought forward and used in the current year. This would increase emissions in the current year, while reducing emissions in future years;
- Extending the time periods within which scheme participants had to surrender permits to meet their obligations to two or more years, allowing them to budget over the period.

As noted above, the Government proposed that permits would have a year in which they could be first surrendered, but there would be no deadline by which a permit would have to be used. This will allow unlimited banking of permits by participants in the scheme to use against future obligations.

The Garnaut Review proposed to allow long-term borrowing of permits where the scheme regulator would act as a "carbon bank". The Government does not propose to extend the period in which scheme obligations could be met beyond one year.

5.9 Allocation of Permits

The Government has two choices for the allocation of permits: it could allocate them for free; or it could auction them. The choice of allocation has a strong influence on the impact of the scheme.

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57 BP Australia. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0355-bp-australia.pdf

The Garnaut Review strongly advocated that permits should be auctioned:

> Free permit allocation would be highly complex, generate high transaction costs, and require value-based judgments regarding who is most deserving.
>
> Free permits are not free. Although they may be allocated freely, their cost is borne elsewhere in the economy—typically, by those who cannot pass on the cost to others (most notably, households).
>
> Recent public wrangling in Australia over these issues is evidence enough of the undesirability and impracticality of administering a system of free permit allocation. In contrast, a competitive process (auctioning) for releasing permits will provide greater transparency and have lower implementation and transaction costs. These are important attributes for the credibility and simplicity of the Australian scheme.

Exxon Mobil agreed with these sentiments:

> Auctioning will impose an immediate cost signal and price impact on firms. The most significant advantage offered by auctioning is that it is simpler to implement … and provides the most efficient mechanism to distribute permits. Consequently, Exxon Mobil would prefer a system of auctioning of all permits except those for Emissions Intensive Trade Exposed industries, which would be allocated 100% free permits.[58]

The Government has proposed that a maximum of 80% of permits could be auctioned at the beginning of the scheme. Over time, the Government intends to move towards 100% auctioning of permits. The Green Paper sets out the following proposals for auctioning permits:

- Auctions would be held quarterly;
- The first auction would take place as early as is feasible in 2010;
- Four years of vintages would be auctioned each year, the current year plus 3 future years. A vintage is the year in which a permit can be first used. The advance auction of future vintages would only take place at one auction each year;
- There would be no restrictions on participation in auctions, i.e. would not be limited to scheme participants;
- The auctions would be carried out by the ascending clock method.[59]

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58 Exxon Mobil, *Submission to the Carbon Pollution Reduction Scheme Green Paper*. September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0254-exxonmobil-australia.pdf

59 Under this method the auctioneer announces a permit price, and bidders bid for the quantity of permits they want at that price. If there are combined bids for more permits than the quantity on sale, the auctioneer raises the price, and bidders bid for the quantity of permits at that price. This process continues iteratively until the combined quantity of bids at a price equals, or is less than the quantity of permits on sale. Bidders then pay the price from the previous round. This method is more transparent than the sealed bid auction method. Where multiple permit vintages are being auctioned, they would be offered in simultaneous ascending clock auctions. This would allow buyers to monitor the price of each vintage simultaneously. In ascending clock auctions, bidders can take part in the auction, or they

5.10 Governance and Enforcement

Governance has large implications for the efficiency, stability, creditability and simplicity of an emissions trading scheme. The Garnaut Review identified the distinction between policy decisions, which are the prerogative of Government and Parliament, and administrative functions, which it suggested should be delegated to an independent entity.

Garnaut suggested that an independent carbon bank should be established to administer emissions trading. The carbon bank would have a high degree of executive authority, wherein the Government would set an emissions target, and the carbon bank would manage the policies to achieve that target.

In the Green Paper the Government rejected the case for the establishment of a carbon bank. It argued that emission trading is a new system, its goal is contentious, and the tools to achieve the goal are likely to be subject to further policy development.

The Government proposed that an independent regulator would administer emissions trading, but foresees a role for Government in policy development as well as target setting for some time to come. The Regulator would be established as an incorporated body subject to the *Financial Management and Accountability Act 1997*.

The roles of Parliament, Government and the regulator in emission trading are summarized in the table:

Decision / role	Responsibility
Carbon Pollution Reduction Scheme Legislation	Parliament
Setting the medium and long-term emissions reduction targets	Parliament
Setting the emissions trajectory (including caps and gateways)	Government
Determining which sectors should be covered initially and on what terms	Parliament
Determining the principles and criteria for assistance for EITEs and strongly affected industries	Parliament and the Government
Deciding whether particular businesses are eligible for assistance	Regulator
Deciding general principles for the banking and borrowing of permits	Parliament
Applying banking and borrowing principles to individual cases	Regulator
Allocating permits, and conducting auctions	Regulator

can enter a schedule of bids to the auctioneer in advance, showing the quantity of permits they would buy at different prices. Since participation in the auctions will not be limited, banks and brokers would be able to buy permits on behalf of clients.

Deciding on methods for measuring and reporting emissions	Government
Determining each businesses obligation to surrender permits	Regulator
Monitoring and enforcing the scheme	Regulator
Maintaining a registry of permit ownership	Regulator
Deciding on links to international emissions trading schemes	Government
Providing education on the scheme	Government
Reviewing the scheme	An independent committee of experts would carry out five yearly reviews of the scheme and provide their advice to Parliament and the Government

Source: As adapted from Department for Climate Change, *Carbon Pollution Reduction Scheme – Green Paper*. Table 13.1 p440. July 2008.
http://www.climatechange.gov.au/greenpaper/report/index.html

The Government intends to implement emissions trading through Commonwealth legislation. States and Territory Governments will be involved through ongoing consultation in the Council of Australian Governments.

5.11 International Linkages

The Government is designing the Carbon Pollution Reduction Scheme so that it can be linked to other international schemes. Linking involves importing units from other schemes and / or exporting units from Australia. Linking has strong implications not only on the operation of the scheme, but also on the domestic price of carbon and the overall cost of the scheme. The Green Paper noted that in world terms Australia is a small emitter of carbon, and in an international carbon market will be a price taker, because of the size of its emissions trading markets compared to other markets. The key consideration for Australia is how quickly it wants international demand and supply conditions to determine the domestic price of carbon, as an alternative to it being determined by domestic conditions alone.

The Government has stated that as part of the White Paper, it will determine and announce the limits of linkages with Kyoto units for the early years of the Scheme. The Government's preferred position is for relaxing restrictions on linking with credible schemes and mechanisms as the Australian scheme matures.

6.0 ADJUSTING TO THE INTRODUCTION OF THE SCHEME

The introduction of emissions trading will constitute the most significant economic and structural reform undertaken in Australia since the trade liberalisation of the 1980s.[60] The Government has committed to use every cent raised by the auctioning of permits to assist Australian businesses and households to adjust to the introduction of the scheme. This

[60] Wong, Senator, the Hon Penny. *Climate Change: A Responsibility Agenda*. Speech to the Australian Industry Group. 6 February 2008.
http://www.environment.gov.au/minister/wong/2008/pubs/tr20080206.pdf

could be in the form of free permits to certain industries, or tax breaks to individuals. In particular, the Government proposes to assist: trade exposed industries; strongly affected industries; and households. Westpac cautioned against extensive intervention in the market:

> Westpac would strongly emphasise that the Carbon Pollution Reduction Scheme is fundamentally a financial market. In seeking to apply a market mechanism to achieve greenhouse gas emission reductions across the economy, the market must be allowed to function effectively, without overt interference from buffering policy mechanisms or overly-generous compensation allocations which distort the market, undermine the intent or integrity of the scheme or which provide market participants with the means of avoiding the medium to long-term behavioural change intended by the introduction of a price on carbon.[61]

The Federal Treasury examined various scenarios in which Australia and the world follow pathways to a low carbon pollution future. Treasury compared these scenarios to a reference case, where no greenhouse gas mitigation occurs. It found that regardless of approach, household income continues to grow strongly. Real disposable income per capita grows at an average annual rate of around 1 per cent in the policy scenarios, compared to 1.2 per cent in the reference scenario.

From 2010 to 2050, Australia's real gross national product (GNP) per capita grows at an average annual rate of 1.1 per cent in the policy scenarios, compared to 1.2 per cent in the reference scenario. By 2020, real GNP per capita is around 9 per cent above current levels, compared to around 11 per cent in the reference scenario. By 2050, real GNP per capita is 55-57 per cent above current levels, compared to 66 per cent in the reference scenario.

Where emission pricing is gradually introduced across the world, countries that defer action face higher long-term costs, because global investment is redirected to countries that act early. Australia therefore benefits from being an early mover. Treasury concluded that compared to other developed economies, Australia faces relatively high mitigation costs as a share of GNP. Emission and energy-intensive industries contribute substantially to the Australian economy, so Australia faces a relatively greater adjustment task.[62] This section reviews Government plans to assist sectors of the economy with the introduction of an emissions trading scheme.

6.1 Trade Exposed Industries

The introduction of an emissions trading scheme in 2010 would impose a cost on Australian businesses that businesses in other countries without emissions trading will not have to bear. This would place Australian businesses at a competitive disadvantage. The concern is that it could cause some businesses to relocate their operations elsewhere, especially those who operate in markets where commodities are traded internationally and whose production gives rise to large amounts of emissions, the Emissions Intensive Trade Exposed industries (EITEs).

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61 Westpac. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0695-westpac-banking-corporation.pdf

62 Australian Treasury, *Australia's Low Pollution Future: The Economics of Climate Change Mitigation.* 30 October 2008.

Industries which are trade exposed are not able to pass on the cost of emission trading by increasing their prices. As they deal in commodities that are extensively traded they are "price takers". If they increased their prices they would be under cut. As well being bad for the Australian economy, this could be worse for greenhouse gas emissions if it led businesses to relocate to countries where they used production processes which create more emissions than those used in Australia. This phenomenon is known as "carbon leakage". Of course, relocating could result in lower emissions, for example if an aluminium smelter relocated to a country that used mainly hydropower for electricity rather than coal.

There are three possible solutions to what the Garnaut Review describes as "this dreadful problem":

- An international agreement which introduces a comprehensive limit on emissions and results in a price being put on carbon which means businesses in other countries face the same limits as Australian businesses.
- Sectoral agreements where all businesses within a particular sector are placed under similar conditions in all countries.
- The Government could provide assistance to Emissions Intensive Trade Exposed Industries (EITEs).

The first two options require the negotiation of international agreements which are unlikely to be in place before emissions trading is introduced in Australia. The Garnaut Review and the Green Paper therefore both contain proposals for assisting EITEs.

6.1.1 The Garnaut response

Deciding on how to assist EITEs is a careful balancing act between avoiding carbon leakage and compromising the effectiveness of the scheme. The Garnaut Review report outlined the risk of getting it wrong:

> No government will be comfortable about subjecting its traded sector to an additional impost on inputs when its trade competitors are not willing to take corresponding policy measures. However, every other alternative facing policy makers means either heavily compromising a national commitment to reduce emissions or increasing the burden on other sectors (non-traded)—most notably, and ultimately, domestic households.
>
> The inevitable consequences of such decisions about burden sharing (including the environment's share) is that the domestic discourse ahead of implementing an emissions trading scheme quickly degenerates into loud professions of support but even louder pleadings for special treatment. These are dreadful problems for every nation's emissions trading scheme in the absence of a global arrangement. Indeed, the dilemma created for individual governments is so great that it has the capacity to destabilise public support and pervert individual domestic schemes to the point of non-viability. The sum consequence of the compromising of individual schemes could leave the world with little chance of avoiding dangerous climate change.

The Garnaut Review explained that the objective of assistance should not be to maintain production by EITEs at the same level as before the introduction of emissions trading, as production levels would be expected to change following the introduction of the scheme.

Instead assistance should maintain production at a level that it would be at if there was carbon pricing internationally. The proposal for assisting EITEs suggested in the Garnaut Review is based on the following prescription:

> For every unit of production, eligible firms receive a credit against their permit obligations equivalent to the expected uplift in world product prices that would eventuate if our trading competitors had policies similar to our own.

The Review went on to explain the advantage of this approach:

> It is simple. It ensures that firms are encouraged to produce at levels that are sustainable in the context of a global agreement, but they are not required to bear the full cost of doing so on their own until such time as there is an agreement. It rewards firms that might be described as early movers but does not penalize other producers. It encourages firms to invest in new low-emissions production processes rather than rewarding those who are most successful in their lobbying efforts. Unlike the input-based compensation arrangements currently dominating the debate, this approach fully accounts for the policies of our trading competitors. In this sense it is self-correcting. As long as other trade competitors do not impose carbon constraints, payments continue in full.

The Review pointed out that almost all products that are sold in Australia are traded to some extent, and therefore suggested that a threshold should be set to determine eligibility for assistance. Garnaut proposed that credits could be provided either in the form of cash or in permits.[63]

6.1.2 Government proposals

The Government has outlined a different set of proposals for assisting EITEs in the Green Paper. This is summarized as follows:

- Allocate free permits to EITEs;
- The Government proposed to define emissions intensity not by sector, or by firm, but by activity or process. All firms carrying out that activity would be eligible for assistance. The Government argued that there is no measure that could be used to easily determine whether an industry was trade exposed. It gave the example of cement, a product which is traded on world markets, but in which there is limited trade into Australia. However, it suggests that increasing prices of Australian cement could give rise to imports after the introduction of an emission trading scheme. It therefore proposed that all businesses which met the emission intensity criteria be eligible for assistance, unless there is some physical barrier to trade e.g. in the case of electricity which cannot be imported;
- The Government proposed to measure emissions intensity expressed as tons of CO2-e per $m revenue;
- Research suggested that five industries in particular stand out as being particularly emissions intensive compared to the rest of the economy: aluminium; beef cattle; cement and lime; sheep; and dairy cattle.

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63 Garnaut Climate Change Review. *Final Report – Chapter 14.* September 2008. http://www.garnautreview.org.au/pdf/Garnaut_Chapter14.pdf

- The Government proposed to allocate 20% of permits to EITEs at the beginning of the scheme. The Government's preliminary analysis suggests that eligible activities would include (but not be limited to) aluminium smelting, the production of lime, the production of cement clinker, integrated steelmaking, alumina refining and silicon smelting, as well as some activities in the ceramics, chemicals, pulp and paper and other non-ferrous metal smelting industries.
- The Government proposed to target assistance by allocating free permits to cover 90% of the emissions of activities with an intensity of more than 2000t CO2-e/$m revenue and 60% of the emissions of activities with an intensity of more than 1500t CO2-e/$m revenue. Firms would have to provide permits to make up the difference, and to cover any non-EITE activities they undertook
- If the quantity of free permits remained the same over time non-EITEs would have to take more of the burden as the overall scheme cap reduced. To avoid this the Government proposes to gradually reduce the amount of free permits allocated to EITEs, but assistance would not be phased out until such time as an international agreement was in place that meant overseas competitors faced similar conditions.[64]

6.1.3 Industry response

Several organizations representing sectors which are likely to be classified as EITEs called for the Government to do more to enable EITEs to operate after the introduction of emission trading. They cited the Australian Labour Party's manifesto commitment that an emission trading scheme would not place Australian EITEs at a competitive disadvantage, and argued that the proposals in the Green Paper did not honour that commitment.

The Australian Industry Greenhouse Network (AIGN) said that the question of how to deal with EITEs should not be divorced from decisions over emission reductions in international negotiations, but should be an intrinsic part of those negotiations:

> Australia is not the only nation struggling with this matter, and it seems unlikely that a durable international agreement can be achieved unless the nations concerned confront the issue. From Australia's point of view, two options that should be explored are to either negotiate an expanded 'assigned amount' for Australian trade exposed industries, the approach implicit in Australia's submission to the UNFCCC, or for relevant nations to agree to uniformly tax these projects as recommended by [the Garnaut Review].

Pointing to proposals which foreshadow a free allocation of 40% of permits in the EU emission trading scheme to EITEs, the AIGN proposed that 45% of permits be allocated to Australian EITEs, rather than the 20% allocation proposed by the Government. The AIGN argued that anything less than a 100% allocation of free permits to cover the scheme obligations of EITEs (rather than the 90% or 60% allocation proposed by the Government) would fall short of the Government's commitment to ensure Australian EITEs were not placed at a competitive disadvantage.[65]

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64 Department for Climate Change. *Carbon Pollution Reduction Scheme – Green Paper. Chapter 9*. July 2008. http://www.climatechange.gov.au/greenpaper/report/index.html

65 Australian Industry Greenhouse Network. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008.

The Bureau of Steel Manufacturers of Australia said that technical constraints on reducing emissions from the steelmaking process mean that any emissions reductions could only come from improving energy efficiency, such as capturing waste heat to generate electricity. They said that such options were expensive and difficult to retrofit, and could only produce limited emissions savings. Consequently they expressed a concern that "rather than acting as an abatement incentive, there is a danger that the declining free allocation of permits will, over time, exceed the industry's ability to reduce its indirect emissions, thereby simply imposing a deadweight burden or 'tax' that is not borne by our major international competitors." They argued that any reductions in EITE assistance should match the scope for steelmakers to reduce emissions, and that assistance should remain until such time as carbon constraints had been imposed on international competitors. Without such assistance they foresaw carbon leakage from the Australian steel industry, and reduced investment, including in emissions abatement projects.[66]

The Australian Aluminum Council did not agree that EITEs should be allocated a maximum of 20% of permits, and said that aluminum producers should be allocated 90% free permits irrespective of their emissions intensity. It suggested that global coverage of 80% of emissions from the production of aluminum and alumina in a carbon pricing system would be an appropriate threshold to trigger a phase down of the free EITE permit allocation.[67]

The Cement Industry Federation was opposed to the Government's proposal to define EITEs by activity or process, and argued that cement manufacture was an integrated process, the whole of which should be classified as an EITE. The Federation stated that the progressive reduction in permit allocation to EITEs over time would deter investment and lead to the closure of existing operations. This would inevitably lead to carbon leakage as Australia was second to Japan in terms of the low emissions intensity of cement making.[68] The Australian Institute of Petroleum considered that oil refining should be classified as an EITE, as emission trading will impose a cost on refining in Australia which refiners in other countries will not face. It argued that free permits should cover 100% of EITE emissions and should not be limited to 20% of the total scheme cap. Any reduction in free

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http://www.climatechange.gov.au/greenpaper/consultation/pubs/0424-aign-part1.pdf

66 Bureau of Steel Manufacturers of Australia. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0408-bureau-of-steel-manufacturers.pdf

67 Australian Aluminum Council. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0689-australian-aluminium-council.pdf

68 Cement Industry Federation. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0926-cement-industry-federation.pdf

allocation of permits should be linked to the adoption of permits by competitor countries.[69]

5.1.4 Non-industry response

The Australia Institute pointed out that the cost of emissions trading to EITEs was likely to be much smaller than the impact of exchange rate fluctuations:

> In January 2001 the Australian dollar was buying 51.7 US cents. In July 2008 it was buying 96.2 US cents – an increase of over 86 per cent. Since July 2008 the Australian dollar has fallen steadily to around 82 cents in September, a reduction of around 15 per cent. While there is little doubt that this volatility has had an impact on the profitability of some exporters, and of import competing industries, there have been no calls from major business groups for the government to abandon the floating exchange rate or undertake other macroeconomic policies to protect 'trade exposed' industries.
>
> The Green Paper estimates that electricity prices are likely to increase by around 16 per cent. If energy accounted for 50 per cent of a firm's costs then the impact of the CPRS would be an increase in costs of around 8 per cent. The recent reduction in the value of the dollar would offset this increase twice over. [70]

The Australia Institute argued for a border tax on emissions intensive imports to be used instead of the allocation of free permits.

The Australian Conservation Foundation thought that the case for assisting EITEs had been overstated, and that industry had had more than 15 years to prepare for the introduction of emission trading. It said that EITEs should be allocated no more than 10% of permits for free.[71] The Climate Action Network Australia, an alliance of environmental, health, community development, and research groups, pointed out that EITEs were located in Australia due to her stable institutional and political structures, access to a skilled workforce and resource deposits, and some of the lowest energy prices in the world (even after the introduction of emissions trading). The Network thought it was unlikely that companies would bear the cost of relocating plants overseas to avoid a carbon cost that was likely to emerge in most countries in the next decade. It believes that companies would have already factored a future price of carbon into their long-term investments.[72]

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69 Australian Institute of Petroleum. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0673-australian-institute-of-petroleum.pdf

70 Australia Institute. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0482-the-australia-institute.pdf

71 Australian Conservation Foundation. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0809-australian-conservation-foundation.pdf

72 Climate Action Network Australia. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0272-climate-action-network-australia.pdf

WWF Australia's submission to the Green Paper included a table showing examples from a US Economic Policy Institute briefing paper where industry had been overcompensated for the introduction of past environmental regulations in the United States. WWF Australia commented that:

> There is nothing surprising about this phenomenon. Firms have a strong incentive to avoid regulation for as long as possible – including by exaggerating its cost and impact – but an even stronger one to find a solution once regulation is imposed.[73]

6.2 Strongly Affected Industries

The introduction of emissions trading will affect emissions intensive industries in Australia, whether they are trade exposed or not. If businesses cannot pass on the cost of emissions because other domestic competitors have lower emission levels then this could reduce their profitability. The Government has committed to addressing the impact of emissions trading on "strongly affected industries". The Green Paper sets out an approach for assessing which Australian industries would be strongly affected by emissions trading. This finds that coal fired electricity generators would be defined as a strongly affected industry. Electricity generation is not trade exposed, because the lack of infrastructure connecting Australia to other countries constitutes a physical barrier to trade. The Government finds that coal fired electricity generation would be strongly affected for three main reasons:

- It is highly emissions intensive, and competition from other generators may mean coal-fired generators cannot pass on the costs of emission trading in electricity prices;
- Coal fired generation is capital intensive, and generators have significant "sunk" capital costs in assets which cannot be used for other purposes;
- In the absence of proven carbon capture and storage (CCS) technologies[74], there is a lack of viable opportunities to reduce emissions.

The Government proposes to assist coal-fired electricity generators to adjust to emissions trading through an Electricity Sector Adjustment Scheme. The details of the Scheme are yet to be finalised, but essentially the Government proposes three types of assistance:

- Providing further support for the development of carbon capture and storage technologies;[75]
- Addressing the impacts of emissions trading on workers, communities and regions through structural adjustment packages;

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73 WWF Australia. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0522-wwf.pdf

74 Carbon Capture and Storage is considered in detail in Briefing Paper 02/08 http://www.parliament.nsw.gov.au/prod/parlment/publications.nsf/key/CarbonCaptureandStorage

75 The Green Paper sets out existing Government support for CCS and lists 11 projects with total funding of $568m

- Providing direct assistance to coal-fired generators.[76]

Exxon Mobil implied that by supporting CCS the Government was "backing a winner" which was out of step with the free market philosophy underlying emission trading:

> The practice of governments mandating specific technological solutions to achieve emissions abatement is antithetical to the goals of an ETS — which is premised on allowing firms to achieve the least cost outcome within a market framework. If governments choose to intervene within the emissions market by establishing and mandating specific technologies (such as CCS) they run the risk of undermining the scheme and producing sub-optimal outcomes.[77]

In the Green Paper the Government considers whether direct assistance is needed beyond support for CCS and an adjustment package. It reviews three arguments for providing direct assistance: that the scheme could affect Australia's energy security; that it would be unfair; and the effect it would have on investment. The Government says that it is not necessarily convinced of the validity of claims of the scheme's effects on energy security, and that "at the very least arguments to provide assistance on the grounds of fairness are not clear cut". However, the Government does consider that the effect on the investment environment does justify the provision of direct assistance to the coal-fired electricity generation sector.

The possibility of changes to the regulatory environment is a factor that investors must take into account. The Government considers the extent to which the introduction of emissions trading is something that investors in electricity generation could have foreseen. On one hand there has been some risk of policy change in the area of climate change for some time, since e.g. the adoption of the UNFCCC in 1992 and the signing of the Kyoto Protocol in 1997. On the other hand, Australia only ratified the Kyoto Protocol in March 2008. To the extent that the introduction of emissions trading is an unexpected policy change that could not be foreseen, this could mean that investors change their perception of risk, on the basis that there could be sudden policy changes in the future that might affect their returns. The Government explains what this might mean, and concludes that on this basis, that direct assistance to the coal-fired electricity sector is justifiable:

> Increased risk for investors in the industry would increase the cost of energy, as new investments would require a return sufficient to cover a higher risk premium than previously, purely because of greater uncertainty about regulatory settings. In extreme cases, particular investments could be delayed or abandoned, potentially affecting energy security.
>
> On balance, there is some case for the Government to provide limited direct assistance to coal-fired electricity generators as an appropriate measure to partially ameliorate the

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76 Department for Climate Change. *Carbon Pollution Reduction Scheme – Green Paper. Chapter 10*. July 2008. http://www.climatechange.gov.au/greenpaper/report/index.html

77 Exxon Mobil, *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0254-exxonmobil-australia.pdf

> most acute impacts of the scheme on particular entities. This assistance is expected to reduce the impact of the scheme on assessments of the risk of investing in the Australian electricity generation sector and underpin the investment environment in the sector. [78]

The Government intends to determine the amount of direct assistance once it has announced a medium term target for reducing Australia's emissions. This is because the more ambitious the target, the higher the price of permits is likely to be, and the greater the cost to coal-fired generators. Assistance would only be available for investments made before 3 June 2007, the date when the introduction of an emissions trading scheme became bipartisan policy in Australia. Assistance would be split into two pools for generation from black and brown coal, and then allocated between generators according to the productive capacity of power stations. The Government could offer assistance as free permits or cash payments. Assistance would be "once and for all", that is, even if payments or free permits were made/allocated over a number of years, there would not be a commitment to provide ongoing assistance.

The Energy Supply Association of Australia, National Generators Forum, Energy Retailers Association of Australia, and Australian Pipeline Industry Association agreed with the Government's assessment of the implications of the scheme for investor confidence. They submitted that the basis for assistance should be the effect on asset value, and should be provided to electricity generators that combust coal as their primary fuel source. They prefer that assistance take the form of free permits, as these provide a hedge against movements in the permit price.[79]

The Australian Conservation Foundation did not think there was a case for assisting coal fired generators. It cited the Garnaut review's draft report which argued against doing this.

6.3 Households

The relative prices of goods and services will change as a result of the introduction of emissions trading. Emissions intensive products are likely to become more expensive as the "carbon price" is incorporated into their pricing. With the introduction of the Carbon Pollution Reduction Scheme, Treasury modelling suggests a one-off rise in the price level of around 1-1.5 per cent can be expected, with minimal implications for ongoing inflation.

For the average household, this corresponds to an extra $4-5 per week spending on electricity and $2 per week on gas and other household fuels. This corresponds to an increase in electricity prices of 17-24 per cent and in gas prices of 11-15 per cent. Prices of petrol and emission-intensive meat products will not be affected initially, due to reductions in fuel taxes and agriculture's initial exclusion from the Scheme.[80]

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78 Department for Climate Change. *Carbon Pollution Reduction Scheme – Green Paper. Chapter 10*. July 2008. http://www.climatechange.gov.au/greenpaper/report/index.html

79 Energy Supply Association of Australia, National Generators Forum, Energy Retailers Association of Australia, Australian Pipeline Industry Association. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0715-esaa.pdf

80 Australian Treasury, *Australia's Low Pollution Future: The Economics of Climate Change*

The Government does not intend the introduction of emissions trading to have any redistributional effects, and in particular it does not intend it to make low-income households worse off. Preliminary analysis of the price effects of the scheme on households has shown that they may be mildly regressive – increases in prices as a proportion of household expenditure range from 1.2% for sole parent households to 0.8% for high income households. To address the impacts of the scheme on households, the Government has made a series of commitments to:

- Increase payments above automatic indexation to people in receipt of pensioner, carer, senior and allowance benefits and provide other assistance to meet the overall increase in the cost of living flowing from the scheme;
- Increase assistance to other low-income households through the tax and payment system;
- Provide assistance to middle-income households;
- Review these assistance measures annually in the Budget;
- Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills;
- Consider the interrelationships between the tax system and the scheme as part of Australia's Future Tax System review.[81]

In their submission on the Green Paper, the Energy Supply Association of Australia, National Generators Forum, Energy Retailers Association of Australia, Australian Pipeline Industry Association supported the Green Paper's proposition that households should not be shielded from increased energy prices, but rather any assistance provided should be through tax and income measures. They argued that ensuring vulnerable customers continue to have access to energy and retailers are not exposed to increased levels of bad debt will require adequate compensation to low-income households through the welfare system.[82]

Mitigation. 30 October 2008.

81 Department for Climate Change. *Carbon Pollution Reduction Scheme – Green Paper. Chapter 8*. July 2008. http://www.climatechange.gov.au/greenpaper/report/index.html

82 Energy Supply Association of Australia, National Generators Forum, Energy Retailers Association of Australia, Australian Pipeline Industry Association. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0715-esaa.pdf

7.0 THE IMPACT OF A CARBON POLLUTION REDUCTION SCHEME ON OTHER GREENHOUSE GAS INITIATIVES.

Across the three levels of government, there are a plethora of greenhouse gas reduction programs. The Council of Australian Governments is developing a set of criteria to assess whether existing policy measures are complementary with the Carbon Pollution Reduction Scheme. The Australian Government's preferred position is that State and Territory governments discontinue their market-based programs once the Carbon Pollution Reduction Scheme commences. The NSW Government agrees with this position, and in November 2006 the *Electricity Supply Act 1995* was amended so that the NSW Greenhouse Gas Abatement Scheme may be terminated if NSW participates in a national emissions trading scheme. The NSW Government has published a discussion paper to facilitate the transition to the national scheme.[83]

However, the Federal government considers that an emissions trading scheme needs to be complemented with a program to assist renewable energy production, and State governments are introducing special programs targeting energy efficiency.

7.1 The Renewable Energy Target Scheme

In 2001 the Howard Government introduced the Mandatory Renewable Energy Target (MRET) scheme, with a target that 9,500 GW/hours of electricity would be produced by renewable sources (approximately 2% of national consumption). In 2007 the new Rudd Government announced an expansion of the scheme, called the national Renewable Energy Target scheme. The new scheme will:

- Ensure the equivalent of at least 20 per cent of Australia's electricity supply, approximately 60 000 gigawatt-hours (GWh), is generated from renewable sources by 2020;
- Bring both the national MRET and existing state-based targets into a single national scheme;
- Phase out the RET between 2020 and 2030 as emissions trading matures and prices become sufficient to ensure a RET is no longer required.

The design of the RET scheme is being developed through the Council of Australian Governments, which released a discussion paper in July 2008.[84] The Garnaut Review estimated that to achieve the RET target an additional 21Terrawatt Hours of renewable energy would be required, largely filled by wind based generation (representing an additional 8000 megawatts of installed wind capacity). This is likely to replace gas fired power generation, and the additional cost is likely to be around $750 million to $1.1 billion per annum by 2020. Garnaut notes a perverse consequence of expanding the MRET at the same time as implementing the emissions trading scheme. Having both schemes operating side by side could see an increase in coal fired power generation (by more than 2000 megawatts), as gas fired plants are crowded out by the MRET. This would not occur if the emissions trading scheme was operating without the MRET.[85]

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83 NSW Government, *Transitional arrangements for the NSW Greenhouse Gas Reduction Scheme: Consultation Paper*, April 2008.

84 Council of Australian Governments Working Group on Climate Change and Water, Design Options for the Expanded National Renewable Energy Target Scheme, July 2008.

85 Garnaut,R. *The Garnaut Climate Change Review, Final Report*. Cambridge University

7.2 The NSW Energy Efficiency Trading Scheme

Similarly, the NSW Government intends to introduce a program focusing on energy efficiency. The Government argues that because of market failures and barriers, cost-effective improvements in energy efficiency may not be delivered by emissions trading schemes alone.

In response to these perceived market failures, the NSW Government intends to legislate for the introduction of a NSW Energy Efficiency Trading Scheme. This will be done under the framework of the existing Greenhouse Gas Reduction Scheme, by setting a new target to increase energy efficiency activity under the scheme. Retailers will be required to pursue additional energy efficiency measures in households and businesses from the start of 2009. A new class of tradeable certificate will be established to support the enhanced energy efficiency target. It is proposed that the NEET Scheme would continue until a national energy efficiency trading scheme is established, or in the absence of this, until 2020.[86]

There has been a mixed response to the scheme. For instance, the Total Environment Centre strongly supported it.[87] In contrast, the Electricity Supply Association of Australia did not, and argued that it pre-empts the COAG commitment to a single national coherent and streamlined set of climate change measures to complement a national emissions trading scheme.[88]

8.0 EMISSION TRADING SCHEMES INTERNATIONALLY

Worldwide, there are a variety of emission trading schemes in operation. The largest of these is the European Union Emissions Trading Scheme. An overview of these schemes is presented below, followed by more detailed case studies of the European, New Zealand and Canadian scheme.

Japan's Voluntary Emissions Trading Scheme

This is a voluntary scheme established in 2005 to trial emissions trading, initially between 31 businesses.

Regional Greenhouse Gas Initiative (US)

The Regional Greenhouse Gas Initiative (RGGI) is a cooperative effort by ten Northeast and Mid-Atlantic states to limit greenhouse gas emissions. It is the first mandatory, market-based CO_2 emissions reduction program in the United States. These ten states will cap CO_2 emissions from the power sector, and then require a 10 percent reduction in these emissions by 2018. The majority of CO_2 allowances issued by each participating state will be

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Press, 2008, at 355.

86 NSW Government, *NSW Energy Efficiency Trading Scheme*, July 2008.

87 Total Environment Centre, *Submission to Discussion Paper on NSW Energy Efficiency Trading Scheme*, 6 August 2008.

88 Electricity Supply Association of Australia, *NSW Energy Efficiency Trading Scheme, ESAA Submission*, 6 August 2008.

distributed through quarterly auctions. The proceeds of allowance auctions will be used to support low-carbon-intensity solutions, including energy efficiency and clean renewable energy. The electric power generators may also use offsets (greenhouse gas emissions reduction or sequestration projects at sources beyond the electricity sector) to help meet their compliance obligations.[89] The first auction of permits was held in September 2008.

Western Climate Initiative (US)
A group of seven Western states (United States) and four Canadian provinces have agreed to develop an initiative to reduce aggregate emissions to 15% below 2005 levels by 2020. Recommendations for the design of a cap-and-trade emissions trading system were released in September 2008. The Initiative begins in 2012, and its coverage represents over 70 percent of the Canadian economy and 20 percent of the U.S. economy.[90]

The Midwestern Greenhouse Gas Accord
The Accord was agreed in November 2007, and intends to develop a cap and trade emissions trading scheme. It hopes to have the draft final scheme arrangements in place by September 2009. The Accord includes six US states and one Canadian province.[91]

California
Draft plan to reduce California's greenhouse gas emissions by 30 percent over the next 12 years and to 80% of 1990 levels in 2050, in part via an emissions trading scheme.

8.1 Case Study Canada

In 2007 Canada introduced new regulatory controls on greenhouse gas and pollution emissions, with an emissions trading scheme to be introduced in 2010. The government introduced mandatory emission reduction targets, based on an improvement of 6% each year from 2007 to 2010. This yields an initial enforceable reduction of 18% from 2006 emission-intensity levels in 2010. Every year thereafter, a 2% continuous emission intensity improvement will be required, resulting in an industrial emission-intensity reduction of 26% by 2015. The regulations cover facilities in the following sectors:

- electricity generation produced by combustion;
- oil and gas;
- forest products;
- smelting and refining;
- iron and steel;
- some mining; and
- cement, lime, and chemicals.

To meet their legal obligations, firms can:

- reduce their own emissions through abatement actions;
- contribute to a technology fund;

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89 Regional Greenhouse Gas Initiative Inc, *About the RGGI*, Accessed October 2008.

90 Western Climate Initiative, U.S. States, Canadian Provinces Announce Regional Cap-and-Trade Program, 23 September 2008.

91 Midwestern Greenhouse Gas Reduction Accord,

- use emissions trading, and certain credits from the Kyoto Protocol's Clean Development Mechanism; and
- use a one-time recognition of early action for firms that took verified action between 1992 and 2006 to reduce their greenhouse gas emissions.[92]

8.2 Case Study: New Zealand

New Zealand introduced an emissions trading scheme covering the six Kyoto gases in 2008. Initially only forestry is included, with a five year transition period to cover all major sectors of the economy by 2013. There is also transitional assistance to the forestry, industry, fishing and agriculture sectors and to households to support their adjustment to emissions pricing. The emissions trading scheme will be linked to the international market in units accepted under the Kyoto Protocol, and will be able to support bilateral linkages to other domestic trading schemes in the future.[93]

New Zealand has adopted the following greenhouse reduction targets:

- By 2025, 90 per cent of electricity generation will be from renewable sources (based on an average hydrological year).
- By 2040, per capita transport greenhouse gas emissions will be reduced by half of those in 2007.
- By 2020, there will be a net increase in forest area of 250,000 hectares above that in 2007.
- By 2013, greenhouse gas emissions from the agricultural sector will be reduced by 300,000 tonnes of CO_2 equivalent compared to business as usual.
- By 2015, the average emissions performance of light vehicles entering the fleet will be 170g/km of CO_2.
- By 2025, up to 9.5 Peta Joules per year of energy from woody biomass or direct use geothermal will be utilized additional to that used in 2005.[94]

8.3 Case Study: European Union Emissions Trading Scheme

The *EU Emissions Trading Scheme* was launched on January 1 2005.[95] The scheme is the largest 'cap and trade' scheme in the world and is the core instrument for Kyoto compliance in the European Union.

It currently covers over 10,000 installations in the energy and industrial sectors which are collectively responsible for close to half of the EU's emissions of CO_2 and 40% of its total

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92 Government of Canada, Regulatory Framework for Air Emissions, 2007. See: http://www.ecoaction.gc.ca/news-nouvelles/20070426-1-eng.cfm

93 NZ Government Ministry for the Environment, *Major design features of the emissions trading scheme*. October 2008. See: http://www.mfe.govt.nz/publications/climate/emissions-factsheets/factsheet-16.html

94 NZ Government Ministry for the Environment, *The Path Ahead*, September 2008. See: http://www.climatechange.govt.nz/reducing-our-emissions/the-path-ahead.html

95 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003, establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. *Official Journal of the European Union*, L 275/32, 25 October 2003.

greenhouse gas emissions. Discussions are under way on legislation to bring the aviation sector into the system from 2011 or 2012. The Scheme excludes emissions of non-carbon dioxide emissions, which make up about 17% of the Union's total greenhouse gas emissions.[96]

Each year installations are required to report by 31 March their carbon dioxide emissions for the preceding calendar year. By 30 April they must then surrender sufficient allowances to cover the carbon dioxide emitted. Operators can choose to:

- Meet their allocation by reducing emissions;
- Reduce emissions to below their allocation and sell the excess allowances; or
- Produce emissions above their allocation and buy allowances from other participants or the Clean Development Mechanism.

If sufficient allowances are not surrendered, a fine is payable. During Phase 1 of the Scheme (2005-2008) the fine was €40 per tonne of emissions. Phase 2 (2008-2013) of the Scheme has commenced, and the fine has risen to €100 per tonne of emissions.

For the first and second phases of the Scheme, at least 90% of the emission allowances were distributed free of charge. This attracted some criticism, at it gave rise to windfall profits to some industries, notably power generators. For the second trading period the Commission has capped national emissions from EU ETS sectors at an average of around 6.5% below 2005 levels.

The basis of a successful market-based instrument is that the carbon price signal flows though the economic chain gradually inducing moves to low carbon production and consumption choices at each stage. To date, the introduction of the European Trading Scheme has seen a mixed integration of the carbon price signal. In those sectors where companies compete against others not subject to climate change policies, there has been a limited increase in prices. This implies that the companies are absorbing the increasing carbon cost. In other sectors, particularly power generation, the pass through of the carbon price has been more easily achieved, and has contributed to an increase in electricity prices.[97]

The price of emission allowances has been determined by the market, and the European Commission has identified that market price is influenced by several factors, including:

- Reduction potential and costs to reduce emissions;
- Allocations;

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96 Lets Update Partners, AEA Technology Environment and Ecofys UK, LETS, LIFE Emissions Trading Scheme, LETS Update: Decision Makers Summary, April 2006, at 2. See:http://www.environment-agency.gov.uk/commondata/acrobat/lets_update_dmsummary_1383661.pd, Accessed December 2006.

97 Commission of the European Communities, Communication from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, *Building a global carbon market – Report pursuant to Article 30 of the Directive 2003/87/EC*. Brussels, 13.11.2006 COM (2006) 676 final.

- Access to availability of Clean Development Mechanism credits;
- Fossil fuel prices;
- Weather patterns;
- Political developments.[98]

On 23 January 2008, the European Commission adopted a proposal designed to amend the current emissions trading scheme. The goal is for a reduction in EU emissions of at least 20% by 2020 compared with 1990 levels, and by 30% provided that other industrialised countries commit to comparable efforts in the framework of a global agreement to combat climate change post-2012. The main changes proposed are:

- One EU-wide cap on the number of emission allowances instead of 27 national caps. The annual cap will decrease along a linear trend line, which will continue beyond the end of the third trading period (2013-2020);
- A much larger share of allowances will be auctioned instead of allocated free of charge.
- Harmonised rules governing free allocation will be introduced. A number of new industries (e.g. aluminium and ammonia producers) will be included in the ETS; as will two further gases (nitrous oxide and perfluorocarbons).[99]

In a review of the EU ETS, it was found that the level of free allowances is crucial to the competitiveness impact of the scheme on industry. Some industries, particularly cement and steel manufacturing, required free permits to ensure that production shifts and CO_2 leakage did not occur. [100]

98 Commission of the European Communities, Communication from the Commission to the Council, The European Parliament, the European Economic and Social Committee and the Committee of the Regions, *Building a global carbon market – Report pursuant to Article 30 of the Directive 2003/87/EC*. Brussels, 13.11.2006 COM (2006) 676 final.

99 Europa, *Press Release: Questions and Answers on the Commission's Proposal to Revise the EU Emissions Trading System, 23 January 2008.*

100 European Commission Directorate General for Environment, *EU ETS Review, Report on International Competitiveness,* December 2006. Authored by McKinsey & Company and Ecofys.

9.0 CONCLUSION

Since agreeing to stabilise greenhouse gas emissions in the atmosphere in the early 1990s the nations of the world have yet to make progress towards achieving this goal. The developed countries that agreed to limit their emissions under the Kyoto Protocol have made mixed progress towards achieving their targets, and the overall goal of Kyoto to reduce emissions by 5% on 1990 levels looks unlikely to be met. At the same time, developing countries have continued to increase their emissions, and emissions from air travel, not covered by Kyoto, have increased exponentially. Atmospheric greenhouse gas concentrations have now increased past a point at which scientists now expect some level of climate change to occur. Levels are expected to continue increasing over the coming decades.

From 2000 to 2006 Australia's emissions increased by 4%. The target proposed by Garnaut would require Australia to cut its emissions by 80% by 2050 on 2000 levels. It is clear that achieving this level of cuts will require a paradigm shift in policy.

The Government's proposals for emissions trading under a Carbon Pollution Reduction Scheme are intended to create that new paradigm. By virtue of the sectors of the economy that would be covered, and that a significant proportion of permits will be auctioned from the start, the Government's proposals for an emissions trading scheme are the most ambitious seen worldwide.

International negotiations on a successor to the Kyoto protocol will have a great bearing on emission trading in Australia, as they will determine the price of permits and their cost to business and households. The Government's proposals seek to strike a balance between creating a system that can deliver the level of cuts required if Australia is to play its part in an international agreement to avoid dangerous climate change, and avoiding unnecessary economic sacrifices if such an agreement is not reached.

At the time of writing the strength of the world's commitment to reducing greenhouse gas emissions is uncertain. Some commentators think an ambitious international agreement is possible. Others think Australia may be in danger of going too far in committing to act ahead of the rest of the world, and acting alone will not result in any benefit. It is against this backdrop that Professor Ross Garnaut has advised the Government on forthcoming international climate change negotiations and a target for Australia to reduce its emissions. The Garnaut Review concluded that the time was not ripe for an ambitious agreement to cut emissions. Instead he has advised that a less ambitious target could be agreed now, which could pave the way to a more ambitious agreement in the future.

Appendix One

International Climate Change Negotiations – The Garnaut Model

The Garnaut Review considered two scenarios for an international agreement to limit emissions so that atmospheric greenhouse gas concentrations are kept below 450 or 550 parts per million of carbon dioxide equivalents. The Garnaut Review proposed a model for an international agreement to limit emissions post 2012 with countries divided into three groups based on their income levels:

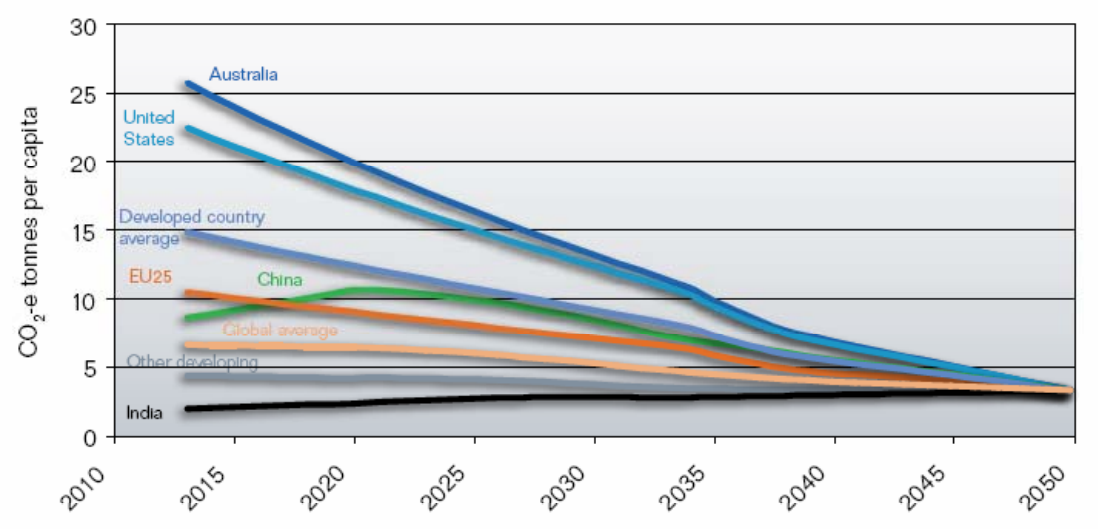
- The first group of all high income countries plus China would undertake binding commitments to reduce emissions. Because of its lower income status, China's targets would not be as stringent during a transition period as those of developing countries. Together this group account for three-quarters of global emissions of carbon dioxide from fossil fuel combustion, the main source of greenhouse gases.

- The second group of countries would comprise most developing countries. They would sign up to "one-sided" targets, that were not binding, but if emissions were reduced below the target, then emissions rights could be sold internationally.

- The third group consists of those countries classified as least-developed by the United Nations, and any other developing countries not in a position to sign up to targets e.g. those experiencing conflict. They could host Clean Development Mechanism projects, and would be expected to place a carbon tax on emissions-intensive industries producing tradable goods in large amounts

Garnaut proposed that the allocation of emissions entitlements should gradually move towards a per capita basis over time, a so-called contraction and convergence approach. The ideological basis of this approach is that every person has an equal right to pollute the atmosphere. This would see emissions in all countries converging around a global average, which would also reduce over time, from around 6 tonnes CO_2 equivalent now, to around 3 tonnes by 2050. While developed countries would face steep cuts in their emissions, developing countries would be allowed some headroom to continue to increase emissions from their current low per capita levels. Figure A1 represents what contraction and convergence would mean under the 550ppm CO_2-e scenario.

Fig A1: Contraction and convergence of emissions 2010 to 2050 under the 550ppm CO2-e atmospheric greenhouse gas concentration scenario



Source: Garnaut Climate Change Review - *Final Report*. Fig 9.4 p.208: http://www.garnautreview.org.au/pdf/Garnaut_Chapter9.pdf

Garnaut suggested that a reduction in emissions of 10% on business as usual by developing countries is the most that could be optimistically expected, so any further reductions to the 450ppm pathway would have to come from developed countries. The Review found that no developed country or group of countries has yet indicated a willingness to cut emissions to the extent required by the 450ppm target. It noted that the European Union's commitment to reduce emissions by 30% on 1990 levels by 2020 falls short of the 36% that would be required, and that the targets proposed by the US Presidential candidates correspond to a 550ppm pathway and not a 450ppm one. Notwithstanding major changes in the political outlook, the Review concluded that a "450ppm agreement" was out of reach at the moment. However, the Review considered an agreement consistent with the 550ppm path does seem to be possible.

Based on this assessment, the Review proposed three levels of Australian emission reductions, depending on what is agreed at the negotiations in 2009:

- An agreement on the 450ppm path is in Australia's interests so Australia should announce that it is prepared to reduce emissions by 25% on 2000 levels if there is an effective global agreement at this level.
- If a comprehensive global agreement to limit carbon dioxide levels in the atmosphere to below 550ppm can be achieved, Australia should agree to a target of reducing emissions by 10% on 2000 levels by 2020, and Australia should be prepared to reduce emissions by 80% by 2050.
- In the absence of such an agreement, Australia should commit to reducing emissions from 2000 levels by 5% from 2020, which is consistent with the Government's target of reducing emissions by 60% on 2000 levels by 2050.

This conclusion by the Garnaut Review attracted considerable comment. The Australia Institute did not agree that Australia should wait for other countries to agree before acting to reduce emissions:

> Australia, like most developed countries, has chosen to show leadership on a wide range of social, environmental and economic issues despite the reluctance of other countries to act. For example, Australia's participation in the invasion of Iraq was based on the notion that it was the 'right thing to do' even though the UN did not sanction such action. Similarly, Australia's position on free trade and our position on whaling is based on the notion that it is 'the right thing to do' – the fact that Japan continues to whale is rarely used as an argument for Australia reviving that industry. The historical analogy of slavery is also illuminating – the abolition of slavery did not begin with a binding international agreement to do so.[101]

The Institute for Public Affairs expressed a different view:

> Australia has more to lose than almost any other country from the costs imposed by CO_2 emission restraints. Cheap coal based electricity has been the bedrock on which much of our industrial development rests. Smelting industries in particular gravitated to Australia in the wake of the 1970s oil price hikes but low cost electricity has assisted the competitiveness of all our tradable goods industries. […]
>
> Taking the lead is rarely the safest approach because it requires others to recognise the authority of a self-identified leader. Alongside the EU, Australia proposes to place itself in the forefront in taking action, a bold position for a country so dependent on fossil fuels. Indeed, the policy approach is akin to unilateral disarmament in the hope that such actions will be reciprocated by others. As always in such decision frameworks the issue arises about what is to be done if others do not follow suit.
>
> Nobody argues that abatement will be useful unless it involves the great majority of emissions. Australia produces only one per cent of the world emissions and if similar actions to those of Australia are not taken across the world, Australia's own actions will be an empty but costly gesture.[102]

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101 Australia Institute. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0482-the-australia-institute.pdf

102 The Institute for Public Affairs. *Submission to the Carbon Pollution Reduction Scheme Green Paper.* September 2008. http://www.climatechange.gov.au/greenpaper/consultation/pubs/0802-institute-of-public-affairs.pdf

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