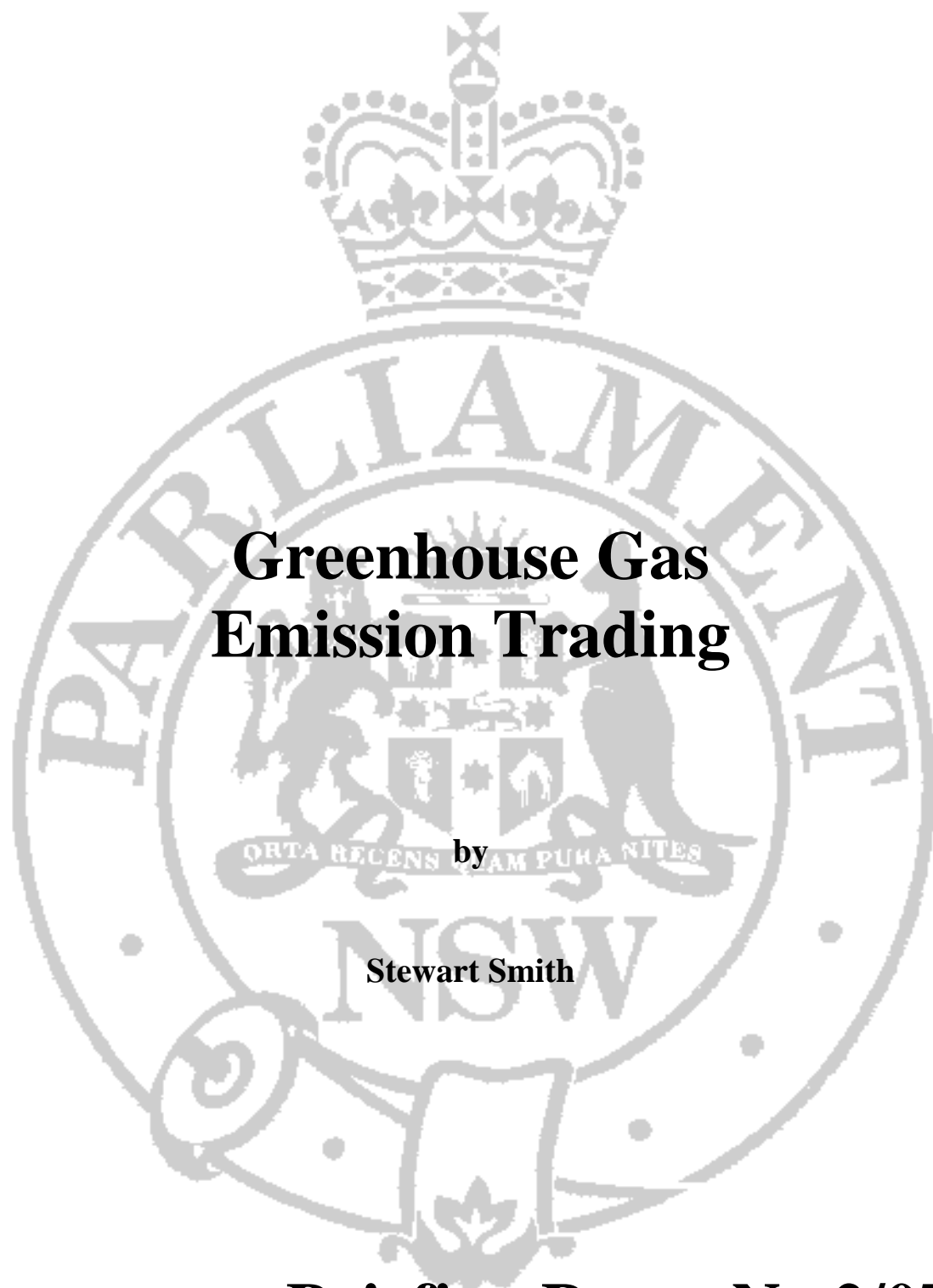


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**Greenhouse Gas  
Emission Trading**

by

**Stewart Smith**

**Briefing Paper No 2/07**

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# **Greenhouse Gas Emission Trading**

**by**

**Stewart Smith**

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Gareth Griffith (BSc (Econ) (Hons), LLB (Hons), PhD),  
Senior Research Officer, Politics and Government / Law ..... (02) 9230 2356

Talina Drabsch (BA, LLB (Hons)), Research Officer, Law ..... (02) 9230 2768

Lenny Roth (BCom, LLB), Research Officer, Law ..... (02) 9230 3085

Stewart Smith (BSc (Hons), MELGL), Research Officer, Environment ... (02) 9230 2798

John Wilkinson (MA, PhD), Research Officer, Economics ..... (02) 9230 2006

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## EXECUTIVE SUMMARY

There are two main categories of economic instruments useful for controlling pollution; those that create property rights to environmental resources and those that act on prices (eg taxes). The property rights approach aims to provide incentives for individuals to conserve their environment by clarifying their rights to and responsibilities for common property. One way to do this is to create a system of tradeable permits. Tradeable permits are quotas, allowances or ceilings on pollution emission levels that, once allocated, can be traded subject to a set of prescribed rules. The ownership of a tradeable permit allows a firm to pollute up to a certain limit. 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. In this pollution control regime, firms with the lowest abatement costs have an incentive to control more emissions, and those with high abatement costs have an incentive to buy permits instead of investing in costly pollution control equipment. The market is left to determine the most efficient way to control pollution within a regulatory framework.

The Kyoto Protocol required Annex 1 Parties (ie, industrialized countries) to reduce greenhouse gas emissions relative to a 1990 base. Australia was permitted to 'reduce' emissions to 108% of the 1990 level. The Protocol, which Australia has not ratified, established three mechanisms designed to help Annex 1 Parties cut the cost of meeting their emission targets. One of these was carbon emissions trading.

The European Union States have agreed to fulfil their commitments to reduce greenhouse gas emissions under the Kyoto Protocol jointly. The *EU Emissions Trading Scheme* was launched on January 1 2005. From this date, certain installations needed a greenhouse gas emissions permit. The scheme is the largest 'cap and trade' scheme in the world and is the core instrument for Kyoto compliance in the European Union. After 18 months of operation, one of the main lessons from the EU scheme is that the simplicity and predicability of the scheme needs to be improved. The scheme is growing in membership and coverage, with the aviation sector likely to be included in the scheme from 2011.

In Australia, proposals for a national emissions trading scheme have been put forward by the States and Territories. These proposals are reviewed, along with comments from industry and community groups. Whilst the Commonwealth Government has historically been critical of a domestic emissions trading scheme, it has recently announced a task force to assess what characteristics a global and domestic scheme should have. The Prime Minister has also stated that market mechanisms, including carbon pricing, will be integral to any long-term response to climate change.





## 1.0 INTRODUCTION

On 2 February 2007, the Intergovernmental Panel on Climate Change released the first volume of *Climate Change 2007: The Physical Science Basis*. Also known as the Fourth Assessment Report, this volume assessed the current scientific knowledge of the natural and human drivers of climate change.<sup>1</sup> It concluded that:

Most of the observed increase in globally averaged temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations. This is an advance since the TAR's [Third Assessment Report] conclusion that "most of the observed warming over the last 50 years is *likely* to have been due to the increase in greenhouse gas concentrations". Discernible human influences now extend to other aspects of climate, including ocean warming, continental-average temperatures, temperature extremes and wind patterns.<sup>2</sup>

Whilst this paper does not review the science behind the greenhouse effect (see Background Paper No 1/2006), the current debate in Australia about greenhouse gas emissions trading must be seen within the international context of the work of the IPCC. This paper reviews greenhouse gas emissions trading, with particular emphasis on the European Union Emissions Trading Scheme and proposals for Australia.

## 2.0 ECONOMIC INSTRUMENTS TO CONTROL POLLUTION

Traditionally, regulatory instruments have been used to control pollution in Australia. 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. The use of economic instruments for pollution control also provides a sound framework for the integration of the environment into the economy, as a principle of sustainable development.<sup>3</sup>

There are two main categories of economic instruments useful for controlling pollution; those that create property rights to environmental resources and those that act on prices (eg taxes).<sup>4</sup> Many economists argue that the use of these economic instruments will lower the marginal cost of pollution abatement compared to regulatory regimes.<sup>5</sup>

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<sup>1</sup> IPCC, *Media Advisory, IPCC adopts major assessment of climate change science*. See <http://www.ipcc.ch/press/prwg2feb07.htm>, Accessed February 2007.

<sup>2</sup> IPCC, *Climate Change 2007: The Physical Science Basis. Summary for Policymakers. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. February 2007. See: <http://www.ipcc.ch/SPM2feb07.pdf>, Accessed February 2007.

<sup>3</sup> Kerin, J. "Economics, the Environment and Sustainable Development" in *Sustainable Economic Growth and Development*. Papers from the Fourth International Workshop on Governance in the Asia-Pacific Region, 10-12 December 1991.

<sup>4</sup> O'Rourke, W and Berveling, S., "Environmental conflict and dispute resolution" Unpublished Paper, *3rd Annual Pollution Law Conference*, Sydney, 28-29 October 1991.

<sup>5</sup> The marginal cost is the cost of one extra unit of pollution control.

The property rights approach aims to provide incentives for individuals to conserve their environment by clarifying their rights to and responsibilities for common property.<sup>6</sup> 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.

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.<sup>7</sup> Tradeable permits are an attempt to create a market by creating and enforcing individual property rights.<sup>8</sup> Thus they are a legal instrument attempting to maximise the economic efficiency of the market.

The ownership of a tradeable permit allows a firm to pollute up to a certain limit. 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.<sup>9</sup>

In this pollution control regime, firms with the lowest abatement costs have an incentive to control more emissions, and those with high abatement costs have an incentive to buy permits instead of investing in costly pollution control equipment. The market is left to determine the most efficient way to control pollution within a regulatory framework.

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.<sup>10</sup>

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<sup>6</sup> Bureau of Industry Economics, *Environmental regulation: The economics of tradeable permits - a survey of theory and practice*. Research Report No 42, 1992, p 8.

<sup>7</sup> Niland, J. "Establishing the Environment Protection Authority in a Property Rights Environment". A paper presented at the conference *The New Environmentalism: Applying Economic Solutions in a Real World*. 18 - 19 March 1991.

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

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

<sup>10</sup> National Emissions Trading Taskforce, *A Possible Design for a National Greenhouse Gas Emissions Trading Scheme*. August 2006.

### 3.0 THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The lead ‘international law’ in the field of climate change is the United Nations Framework Convention on Climate Change. Negotiations to develop the convention began in December 1990 in the UN General Assembly. The Convention was adopted on 9 May 1992, and entered into force on 21 March 1994. The Convention now has 186 Parties and is approaching universal membership.<sup>11</sup> Australia signed the Convention in June 1992 and was the ninth country to ratify the Convention in December 1992.<sup>12</sup>

Since the adoption of the Convention, Parties have continued to negotiate in order to agree on decisions and conclusions that are designed 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 emission reductions for developed countries, relative to a 1990 base year.<sup>13</sup> It was calculated that compliance with these targets would result in an overall global reduction in greenhouse gas emissions of slightly more than five percent from 1990 levels during the first commitment period (2008-2012).<sup>14</sup> It is at these talks that Australia successfully argued that targets should be allocated on the basis of equality of effort, which led to differentiated targets. Hence the target for Australia was 108 percent. With no greenhouse gas abatement measures, based on all sectors except land use change, Australia’s greenhouse emissions were predicted to grow by around 28 percent from 1990 to 2010.<sup>15</sup> Other developed countries that had targets either 100 percent or above the 1990 base included: Iceland (110%); New Zealand (100%); Norway (101%); Russian Federation (100%); and the Ukraine (100%). The remainder of countries had a reduction target ranging from 92 percent to 95 percent, with the majority committed to a 92 percent target.<sup>16</sup>

The Kyoto Protocol came into force on 16 February 2005. As of 13 December 2006, 168 countries had deposited instruments of ratifications, accessions, approvals or acceptances to the Protocol.<sup>17</sup> To date, the Australian Government has refused to ratify the Kyoto

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<sup>11</sup> See website provided by the United Nations Framework Convention on Climate Change: <http://www.unfccc.de/issues/briefhistory.html>

<sup>12</sup> Commonwealth of Australia, *Climate Change. Australia’s Second Report under the United Nations Framework Convention on Climate Change*. November 1997.

<sup>13</sup> 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.

<sup>14</sup> Freeland, S “The Kyoto Protocol: An Agreement without a future?” in *UNSW Law Journal*, Vol 7 No 2 July 2001, at 2.

<sup>15</sup> Commonwealth of Australia, *The National Greenhouse Strategy. Strategic Framework for Advancing Australia’s Greenhouse Response*, 1998, at 1.

<sup>16</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change, Annex B.

<sup>17</sup> United Nations Framework Convention on Climate Change, *Status of Ratification*. See: [http://unfccc.int/kyoto\\_protocol/background/status\\_of\\_ratification/items/2613.php](http://unfccc.int/kyoto_protocol/background/status_of_ratification/items/2613.php), Accessed January 2007.

Protocol.

The Kyoto Protocol established three mechanisms designed to help Annex 1 Parties (ie, industrialized countries) cut the cost of meeting their emission targets. The three Kyoto mechanisms are:

- The clean development mechanism (CDM): this provides for Annex 1 Parties to implement projects that: reduce emissions in non-Annex 1 Parties; or absorb carbon through afforestation or reforestation activities, in return for certified emission reductions.
- The Joint Implementation mechanism: an Annex 1 Party may implement an emission-reducing project or a project that enhances removals by sinks in the territory of another Annex 1 party and count the resulting emission reduction units towards meeting its own Kyoto target.
- Emission Trading: emissions trading provides for Annex 1 Parties to acquire units from other Annex 1 Parties and use them towards meeting their emissions targets under the Kyoto Protocol. This enables Parties to make use of lower cost opportunities to reduce emissions, irrespective of the Party in which those opportunities exist, in order to lower the overall cost of reducing emissions.

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.

The language and terminology of the mechanisms are quite complex. For instance, in emissions trading, each equal to one metric tonne of emissions (in CO<sub>2</sub>-equivalent terms), may be in the form of:

- An assigned amount unit (AAU) issued by an Annex 1 Party on the basis of its assigned amount pursuant to Articles 3.7 and 3.8 of the Protocol;
- A removal unit (RMU) issued by an Annex 1 Party on the basis of land use, land-use change and forestry (LULUCF) activities under Articles 3.3 and 3.4 of the Kyoto Protocol;
- An emission reduction unit (ERU) generated by a joint implementation project under Article 6 of the Kyoto Protocol;
- A certified emission reduction (CER) generated from a clean development mechanism project activity under Article 12 of the Kyoto Protocol.

Emissions trading schemes may be established as climate policy instruments at the national level and the regional level. Under such schemes, governments set emissions obligations to be reached by the participating entities. Depending on the rules of the scheme, these obligations may be fulfilled through holding either the: ERUs; CERs; AAUs; and RMUs established under the Kyoto Protocol or other units established specifically for those trading schemes.<sup>18</sup>

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<sup>18</sup> United Nations Framework Convention on Climate Change, *Emissions Trading*. See: [http://unfccc.int/kyoto\\_protocol/mechanisms/emissions\\_trading/items/2731.php](http://unfccc.int/kyoto_protocol/mechanisms/emissions_trading/items/2731.php). Accessed January 2007.

#### 4.0 EMISSIONS TRADING IN THE EUROPEAN UNION

The European Union States have agreed to fulfil their commitments to reduce anthropogenic greenhouse gas emissions under the Kyoto Protocol jointly. On 13 October 2003 the European Parliament and Council published a Directive establishing a scheme for greenhouse gas emission trading between the member states.<sup>19</sup> The *EU Emissions Trading Scheme* was launched on January 1 2005. From this date, certain installations needed a greenhouse gas emissions permit. The scheme is the largest ‘cap and trade’ scheme in the world and is the core instrument for Kyoto compliance in the European Union.

Each year certain 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.

If sufficient allowances are not surrendered, a fine of €40 per tonne of emissions is payable. During Phase 2 of the Scheme, commencing 2008, the fine rises to €100 per tonne of emissions.

Installations included in the trading scheme – ie, those which need a greenhouse emissions permit are:

- Energy activities
  - Power generation;
  - Combustion installations with a rated thermal input exceeding 20 MW – found for instance in the chemical industry or food processing;
  - Mineral oil refineries;
  - Coke ovens;
- Production and processing of ferrous metals
  - Metal ore roasting or sintering installations;
  - Installations for the production of pig iron or steel, with a capacity exceeding 2.5 tonnes per hour;
- Mineral industry
  - Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day, or lime in rotary kilns with a production exceeding 50 tonnes per day;
  - Installations for the manufacture of glass with a melting capacity exceeding 20 tonnes per day;
  - Installations for the manufacture of ceramic products by firing, in particular

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<sup>19</sup> 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.

roofing tiles, bricks ... with a production capacity exceeding 75 tonnes per day;

- Other activities
  - Industrial plants for the production of: pulp from timber or other fibrous materials; paper and board with a production capacity exceeding 20 tonnes per day.

As part of the Scheme, each Member State had to devise a National Allocation Plan. These plans detail the total quantity of greenhouse gas emission allowances for that country, and the allocation of those allowances to the operator of each installation. Each allowance is the equivalent of one tonne of carbon dioxide. Emission allowances were to a large extent based on past emissions, discounted to meet Kyoto targets. Across the European Union, the power sector accounted for more than 50% of the allocated emission allowances. Annex III of the Agreement establishing the Scheme outlined criteria for the development of National Allocation Plans. These Plans, once drafted by the Member State, then needed European Commission approval.

The first plan of the Trading Scheme was for three years from 1 January 2005, with the second plan for five years from 1 January 2008. For the first plan, at least 95% of the allowances were distributed free of charge. For the second plan, at least 90% of the allowances are to be distributed free of charge. National Allocation Plans are now being finalised for the commencement of the second plan.

The Directive also included provisions for the: monitoring and reporting of emissions; verification; penalties; a registry of allowances; and public access to information.

Currently, the European Union Emission Trading Scheme incorporates about 50% of carbon dioxide emissions across the Union. It does not cover emissions of non-carbon dioxide emissions, which make up about 17% of the Union's total greenhouse gas emissions.<sup>20</sup>

In 2005, more than 320 million allowances worth more than €6.5 billion were reported to have been traded over the counter, either at exchanges or bilaterally. By May 2006, a trading volume of 300 million allowances had been reported with the monthly trading approaching 100 million allowances. Power companies and refineries were among the most active in the market initially, and once the first exchanges emerged around mid-2005, banks and investment funds started to offer services to inactive companies to trade allowances on their behalf.<sup>21</sup>

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<sup>20</sup> 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/commodata/acrobat/lets\\_update\\_dmssummary\\_1383661.pdf](http://www.environment-agency.gov.uk/commodata/acrobat/lets_update_dmssummary_1383661.pdf), Accessed December 2006.

<sup>21</sup> 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.

#### 4.1 The Price of Carbon under the EU Emissions Trading Scheme

The basis of a successful market-based instrument is that the carbon price signal flows through 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.<sup>22</sup>

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

The most significant short term allowance price development took place in May 2006 with the release of the 2005 verified emissions data. A lower level of emissions than many observers expected caused a substantial decline in the market price of allowances within a few days. As shown in Figure 1, the price of a carbon dioxide allowance dropped from around €30 to below €10 in a matter of days. The European Commission expects that price volatility will decrease after the initial phase of the Trading Scheme is over, facilitated by stable political signals, legislative stability, and strong compliance enforcement.<sup>23</sup>

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<sup>22</sup> 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.

<sup>23</sup> 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.

**Figure 1: CO2 Prices (€/tonne) in the EU ETS 2005 - 06**

Source: European Commission Directorate General for Environment, *EU ETS Review, Report on International Competitiveness*, December 2006, at 8. See: <http://ec.europa.eu/environment/climat/emission/pdf/061222compreport.pdf>, accessed January 2007.

More recent allowance price falls have seen the price of carbon for the first phase of the trading scheme fall to a record low in January 2007 to €4.75. Contracts for the second phase of the scheme also fell almost 15% early in the 2007 new year. The reasons for the fall appear to be a combination of factors. Mild winter weather across Europe has resulted in lower power demand, while the gas price is falling as coal prices stay steady. As the price of gas falls, power companies can increasingly switch to gas economically, and in so doing need fewer emission permits because burning gas produces substantially fewer carbon dioxide emissions than burning coal. This is the reverse of market conditions in the early days of 2006 where a cold snap across the continent and a decision by Russia to turn off its gas export pipelines saw carbon prices soar. Meanwhile, there is also declining demand for first-phase allowances amid the revelation during 2006 that more permits have probably been issued in the first phase than are needed by industry to cover emissions.<sup>24</sup>

#### **4.2 The EU Emissions Trading Scheme and Company Competitiveness**

One of the underlying principles of the European Climate Change Programme has been to identify the most cost-effective measures to achieve the Kyoto targets. Recent studies by the European Commission conclude that the Kyoto targets can be achieved at an annual cost of €2.9 to €3.7 billion - less than 0.1 % of GDP in the European Union. One of these studies concluded that without the Emissions Trading Scheme costs could reach €6.8 billion.

The European Commission argues that the scheme will not jeopardise, but rather protect,

<sup>24</sup> Carbon Positive, "EU carbon prices in New Year slump". See: <http://www.carbonpositive.net/viewarticle.aspx?articleID=98>, accessed January 2007.



the competitiveness of the EU economy, as any alternative measures would mean imposing higher than necessary costs on EU businesses.<sup>25</sup>

In addition, the European Emissions Trading Scheme is linked to the flexible mechanisms of the Kyoto Protocol - ie Joint Implementation and the Clean Development Mechanism. In principle, companies which carry out emission reduction projects outside the EU, through these mechanisms, can convert the credits they earn from those projects into allowances that can be used for compliance under the EU Emissions Trading Scheme. The Linking Directive will therefore further lower the cost to EU industry by offering more options for complying with the requirements of the Emissions Trading Scheme.

In terms of industrial sector competitiveness, the impact of the EU Trading Scheme has produced winners and losers. Economic modelling, pricing carbon at an average of €20 /tonne, has shown the following.

### **Electricity**

In the short to mid term, electricity prices should increase in the order of €10 /MWh. This assumes full pass through of the value of allowances to power prices. In the short and medium term, CO<sub>2</sub> emissions trading will make electricity generation more profitable on average, especially for existing nuclear power plants. The profitability of other plants depends largely on the level of free allowances.

### **Steel**

The impact of the trading scheme differs according to the two main steel production processes: Basic Oxygen Furnace (BOF) producing mainly flat products; and Electric Arc Furnace (EAF) in minimills, producing mainly long products from scrap steel. The BOF method produces 2 tonnes of carbon dioxide per tonne of steel, compared to the Electric Arc Furnace method which produces about 0.4 tonnes of carbon dioxide per tonne of steel.

Nearly 100% of emissions in the Electric Arc Furnace are indirect emissions in the form of electricity, compared to only 10% indirect emissions in the Basic Oxygen Furnace.

The total short and mid term cost increase is around 17.3% for BOF and 2.9% for EAF. Given the product mix and types of markets, it is expected that around 6% of the total cost increase in BOF and 66% in EAF can be passed through to customers on average. This is because long products – mostly produced in the EAF process – tend to compete in more local markets, while flat products from BOF go into more global markets. Individual players, particularly in the high-quality segment, could, however, be more affected given their product mix.

Assuming 95% free allowances on direct emissions and a typical industry EBIT (earnings before interest and tax) in the order of 5%, 1.7 percentage points of EBIT might be lost due to CO<sub>2</sub> regulation for BOF and 0.6 of a percentage point for EAF. This therefore has the potential to decrease the value of the BOF industry by one-third.

<sup>25</sup>

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.

### **Pulp and Paper**

The short and mid-term effect of the trading scheme on competitiveness in the pulp and paper sector is to increase their production cost price. There are three main pulp and paper processes. Chemical pulp processing, comprising some 82% of the market, will experience a net cost increase in the order of 0.3 to 1.0%, and up to 1.9% in pulp and paper production based on recovered fibre. Mechanical pulping (6% of total pulp) and thermo-mechanical pulping (12% of total pulp) are affected by a 3 to 4% and 5 to 6% net cost increase respectively.

### **Cement**

Cement can be produced in three processes: dry, semi-dry and wet. Because of higher energy efficiency and much better overall economics, the dry process has become dominant in Europe with a 95% market share. In the dry process carbon dioxide emissions range from 0.4 to 1.0 tonne of CO<sub>2</sub> per tonne of cement with an average of around 0.7 tonne of CO<sub>2</sub>.

The cost for a typical European cement production process will increase by 36.5% due to emissions trading. The biggest part of the increase (approximately 93% ) is from direct emissions. The indirect impact from higher electricity prices is only a small share of the overall cost increase (7%). Depending on the level of potential cost pass through, the cement industry on average across Europe might face a cost increase or come out neutral. The likelihood of a cost increase is highest in areas where the possibility of substitution by imports is highest. The level of free allowances is crucial for the competitiveness impact of the EU ETS on the cement industry. The impact on the cost of the marginal unit of production in the cement industry is very significant. Therefore, under an allocation method based on historic emissions – which is the current preferred method in the EU ETS – the possibility of production shifts and CO<sub>2</sub> leakage is real.

### **Refining**

The refining industry produces a range of products from asphalt to fuel gas based on various crude oil grades. Carbon dioxide emissions correlate strongly with refinery capacity and the typical emissions are 15.0 tonnes of CO<sub>2</sub> per 1000 barrels of crude oil in direct emissions and 1.4 tonnes of CO<sub>2</sub> per 1000 barrels in indirect emissions.

The overall cost for refining one barrel is between €1.0 and €2.5 /tonne depending on refining complexity. At a CO<sub>2</sub> price of €20 /tonne, these costs will increase by about 20.5%. However, this increase represents only about 1 percent of the final product price to end customers and is likely to be passed through to a large extent to customers.

### **Aluminium**

About 50% of the aluminium in Europe is produced by primary smelting, 50% by secondary smelting (recycling). Primary smelting consumes about 20 times more electricity than secondary smelting (15 MWh per tonne versus 0.7 MWh per tonne). As the aluminium industry is currently not included in the EU Emission Trading Scheme, the industry does not yet have to bear direct CO<sub>2</sub> costs.

At a CO<sub>2</sub> price of €20 per tonne and a corresponding short and mid-term electricity price increase of €10 per MWh on average across Europe, the cost of primary aluminium production will increase by 11.4%. The cost of secondary aluminium production will

increase by 0.5%. This cost increase is not covered by any free allocation of allowances. Furthermore, due to competitive intensity, none of the cost increase can be passed through to customers. Competition and trade flows in the aluminium market are highly international. A new smelter in Iceland or China could deliver aluminium to Europe or the US at a cost 10% lower than for European production, including the transport costs, even before an EU ETS driven increase in electricity prices.

All of the impact on aluminium smelting comes from increased power prices resulting from increasing CO<sub>2</sub> cost. Most of the primary smelting capacity in Europe and the United States is likely to be shut down over the next 20 years due to increased power prices and the search for cheaper energy. In many ways, CO<sub>2</sub> is not the determining factor but a contributing/accelerating one. That is, the shut-down of primary smelting in Europe would most likely happen irrespective of CO<sub>2</sub> costs because of the general development in energy prices.<sup>26</sup>

### 4.3 The Future of the EU Emissions Trading Scheme

After its first 12 months of operation, data from the EU Emissions Trading Scheme showed lower greenhouse gas emissions than had been expected. Whilst this sounds a positive development, the environmental outcome is less clear. The European Commission reported:

To the extent that it reflects companies having reduced emissions already in the first year of the EU ETS, this is a positive development. However, to the extent that it reflects an over-estimate of baseline emissions, it means that the environmental outcome of the scheme in the first period will not be as large as it could have been, nor as large as will be necessary to adequately address climate change.<sup>27</sup>

In most Member States, the cap and the allocation of emissions to sectors and installations had been devised from projected emissions. Emission projections are usually based on a combination of: expectations of growth rates in production and consumption; fuel efficiency improvements; and fuel switching. Formal reviews of the Scheme suggest that the use of relatively high growth rates may be introducing inflated emission baselines, resulting in a substantial over-allocation for industry in some countries. In this regard, the identification and transparency of growth rates used needs to be strengthened.<sup>28</sup>

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<sup>26</sup> This section of the paper is adapted from: European Commission Directorate General for Environment, EU ETS Review, *Report on International Competitiveness*, December 2006. Authored by McKinsey & Company and Ecofys.

<sup>27</sup> 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, at 3.

<sup>28</sup> 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.pdf](http://www.environment-agency.gov.uk/commondata/acrobat/lets_update_dmsummary_1383661.pdf), Accessed December 2006, at 6.

After 18 months of the trading scheme operating, other lessons include that the simplicity and predictability of the scheme needs to be improved. A particular issue is that Member States have been responsible for developing their own National Allocation Plans – which is the tool used to allocate the number of allowances as well as how these allowances should be distributed among existing installations and new entrants. The result of this is that National Allocation Plans differ from each other and there is concern that these differences are having an impact on the market. Currently, allocation plans last for five years, which means that certainty can only be given for up to five years ahead. This is considered by many as too short to give sufficient predictability for investment decisions in sectors which are capital intensive and result in installations intended to operate for decades. The European Commission has stated that it agrees with these views, and regards further harmonisation of the cap setting and allocation process, as well as increased predictability, as key strategic issues. A review of the scheme will explore the option of a single EU wide cap and that of separate national caps, and is due to report by 30 June 2007.<sup>29</sup>

Whatever its faults, the EU ETS is growing rather than being scaled back. Four more European nations are due to join the scheme. Norway, Iceland, Switzerland and Liechtenstein, not members of the EU but part of the European Free Trade Area, have agreed in principle to join the scheme. Norway has announced it will join from January 1 2008, whilst the others have yet to set a date. This would take the number of participants over coming years to 31 nations, including the current EU 25 along with Bulgaria and Romania, which joined the EU in 2007.<sup>30</sup>

In December 2006 the European Commission released its recommendations to include the aviation sector in the scheme. It is proposed that all flights within the European Union would be included in the scheme from the start of 2011, with flights to and from the EU to other countries included from 2012. The overall cap on emissions for the sector is to be set at the average level of emissions in the years 2004 to 2006 - and these caps will apply up to 2022. The number of allowances given to each individual airline will be determined at EU level, rather than the system of national allocation plans drawn up by each member state for their industries in the other covered industries. This a major difference between the coverage of the aviation sector and the EU ETS as it currently stands.<sup>31</sup>

Although not a European Union initiative but demonstrative of the political climate in the region, the United Kingdom government has released a feasibility study on a consumer

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<sup>29</sup> 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.

<sup>30</sup> Carbon Positive, "Brown reveals expanded EU ETS, global trading push" in *Carbon News and Info*, Thursday 7 December 2006. See: <http://www.carbonpositive.net/viewarticle.aspx?articleID=495>, Accessed December 2006.

<sup>31</sup> Carbon Positive, "EU wants aviation in ETS by 2011" in *Carbon News and Info*, Thursday 21 December 2006. See: <http://www.carbonpositive.net/viewarticle.aspx?articleID=514>, accessed January 2006.

emissions trading scheme that would see every British citizen issued with a carbon credit card. Whilst there are several models of operation circulating, all share the following characteristics:

- an independent body sets and polices the cap, with limits established well in advance;
- people can either surrender allowances as they buy energy, petrol or flights, or they could sell their allowances in advance and pay for the carbon as part of the price of each qualifying purchase (as visitors to UK would);
- individuals would have something like a carbon credit card to 'swipe' to surrender their allowances from their carbon allowance accounts.<sup>32</sup>

By giving everyone a limited allowance to cause carbon dioxide emissions, total emissions from the population can be limited. Those who need or want to emit more than their allowance have to buy allowances from those who can emit less than their allowance. The feasibility study noted the complex political and operational issues, and concluded:

We believe there is a strong risk that the debate on the relative merits of individual carbon trading will descend quickly into confrontational debate in which practical understanding and analysis take second place to the preservation of increasingly entrenched positions.

We conclude that it is important at this early stage to ground the debate quickly in considerations of political and practical feasibility – and that all potential policy instruments for achieving UK carbon emission reduction goals are considered on a similar basis.<sup>33</sup>

## 5.0 CARBON EMISSION TRADING IN AUSTRALIA

### 5.1 The NSW Greenhouse Gas Abatement Scheme

The NSW Greenhouse Gas Abatement Scheme (GGAS) commenced on 1 January 2003 and is considered to be one of the first, if not the first, mandatory emissions trading scheme in the world. The objectives of the scheme are to reduce greenhouse gas emissions associated with the production and use of electricity and to develop and encourage activities to offset the production of these emissions. The scheme requires electricity retailers in NSW (and since 1 January 2005 the ACT joined the scheme), and some large electricity customers to meet mandatory targets for reducing or offsetting the emission of greenhouse gases from the production of the electricity they supply or use.

Part 8A of the *Electricity Supply Act 1995* sets a State greenhouse gas benchmark

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<sup>32</sup> Roberts, S. and Thumim, J. *A Rough guide to Individual Carbon Trading*. Report to Defra, November 2006. See: <http://www.defra.gov.uk/environment/climatechange/uk/individual/pca/pdf/pca-scopingstudy.pdf>, Accessed January 2007.

<sup>33</sup> Roberts, S. and Thumim, J. *A Rough guide to Individual Carbon Trading*. Report to Defra, November 2006. See: <http://www.defra.gov.uk/environment/climatechange/uk/individual/pca/pdf/pca-scopingstudy.pdf>, Accessed January 2007.

expressed in tonnes of carbon dioxide equivalent per capita. The initial level at the commencement of the scheme was set at 8.65 tonnes of carbon dioxide equivalent. This level has progressively dropped to 7.27 tonnes of carbon dioxide equivalent in 2007, and remains at this level until 2021. This represents a reduction of 5% below the Kyoto Protocol baseline year of 1990. Those in the scheme can reduce the average emissions intensity of the electricity they supply or use by purchasing abatement certificates and surrendering these to the Compliance Regulator. The Independent Pricing and Regulatory Tribunal is the Compliance Regulator for NSW. In the ACT the Independent Competition and Regulatory Commission is the Compliance Regulator.

Each calendar year, benchmark participants must surrender enough abatement certificates to reduce their average emissions to their greenhouse gas benchmark. Abatement certificates can be created by:

- generating electricity in a way that reduces the greenhouse gas emissions per megawatt hour;
- reducing the consumption of electricity (demand side abatement);
- capturing carbon from the atmosphere in forests (carbon sequestration).

The scheme has five Rules addressing these abatement mechanisms and compliance.<sup>34</sup>

Since the scheme commenced, a total of 97 organisations have been accredited as Abatement Certificate Providers for 206 projects. These include: carbon sequestration projects (eg forestry / tree planting); demand side abatement projects (eg provision of energy efficient light globes / showerheads); and generation projects (ie, making the electricity generation process more efficient).

The amount of the greenhouse gas abatement penalty to be imposed on participants that do not meet their reduction target has increased to \$11.50 per tonne of carbon dioxide equivalent for the 2006 compliance year. The legislation requires that the penalty be adjusted each year in accordance with movements of the Consumer Price Index.<sup>35</sup>

In June 2005 the former Premier of NSW, The Honourable Bob Carr MP announced the extension of the Scheme from its original legislated end date of 2012 to 2020 and beyond on a rolling 15 year basis. In November 2005 the NSW Greenhouse Plan confirmed the extension of the Scheme to 2020 if agreement on a national approach to emissions trading is delayed.<sup>36</sup>

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<sup>34</sup> NSW Government, *GGAS Fact Sheet, Abatement Certificates*. See: <http://www.greenhousegas.nsw.gov.au/documents/FS-Sch-Certs-03.pdf>, Accessed February 2007.

<sup>35</sup> NSW Government, *Introduction to the Greenhouse Gas Reduction Scheme*. January 2007. See: <http://www.greenhousegas.nsw.gov.au/documents/Intro-GGAS.pdf>, Accessed January 2007.

<sup>36</sup> IPART, *Compliance and Operation of the NSW Greenhouse Gas Abatement Scheme during 2005. Report to Minister*. Compliance No 25, June 2006.

Whilst the NSW Greenhouse Gas Abatement Scheme is generally supported by conservation organisations, the main criticism is that legislated emission reductions need to be greater. For instance, the approach to cap emissions per capita means that population growth will result in increased emissions.<sup>37</sup>

## 5.2 The National Greenhouse Gas Emissions Trading Scheme

As noted, the Commonwealth Government has, until recently, refused calls to implement a domestic greenhouse gas emissions trading scheme. In response to this, in January 2004 the State and Territory Premiers met and established a taskforce to develop an emissions trading model. In December 2004, the Taskforce released the following ten key design proposals for a National Emissions Trading Scheme, known as NETS:

1. A cap and trade approach should be used as the basis for scheme design;
2. The scheme should be national and sector based;
3. In setting the cap, consideration should be given to the overall national emissions abatement target, and how abatement responsibility is allocated between sectors covered by the scheme and those outside the scheme.
4. The scheme should initially cover the stationary energy sector (including electricity, gas and coal).
5. The scheme should cover all six greenhouse gases under the Kyoto Protocol.
6. Permit allocation should be made on the basis of a mix of administratively allocated and auctioned permits, with both long- and short-term (annual) permits.
7. A penalty should be set to encourage compliance and to establish a price ceiling for the permit market.
8. Offsets should be allowed.
9. Mechanisms should be included to address any adverse effects and structural adjustments.
10. Mechanisms should be included to allow a transition for participants who have taken early abatement action and new entrants.

Over 2005 and 2006 several communiqués and papers were released by the First Ministers and Taskforce. This culminated with the release in August 2006 of a discussion paper by the Taskforce on *Possible Design for a National Greenhouse Gas Emissions Trading Scheme*. The paper invited comment on the proposed scheme, which had as its basis the development of policy to reduce Australian greenhouse gas emissions by around 60% compared with 2000 levels by the middle of the century. The proposed scheme is discussed below.

### Coverage

It is proposed that the scheme would initially cover the stationary energy sector. Electricity generators with a capacity of over 30 MWe would be covered from the scheme's outset. This would cover an estimated 190 Mt of emissions under business as usual from around

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<sup>37</sup> Total Environment Centre, *Media Release: Renewable Energy Target Good Step Forward*. 9 November 2006. Also: *Media Release: Greenhouse Scheme Extension Falls Short as Emissions Spiral*. 20 October 2006. See: <http://www.tec.org.au>, Accessed February 2007.

100 facilities in 2010. Additional emissions from other sources of stationary energy emissions, plus fugitive emissions from gas pipelines, could be phased in at the end of the first five years of the scheme. Extending coverage to these sectors would increase coverage to around 275 Mt under business as usual from around 250 facilities in 2015, or around 45% of national emissions at that time. The design of the scheme has been developed so that additional sectors could be added over time.

All six types of greenhouse gases covered by the Kyoto Protocol are proposed to be covered.

### **Scheme cap**

The scheme cap sets a limit on the number of tonnes of greenhouse gas emissions that could be emitted by the covered sectors without incurring a penalty. The cap defines the magnitude of the abatement task and significantly affects most other scheme design choices. The scheme cap should:

- Preferably be consistent with a long term reduction target;
- Allow for the Australian economy to transition as smoothly as possible to a carbon-constrained future;
- Be able to respond flexibly to the evolving scientific understanding of climate change;
- Consider the realities of the energy market. The electricity generation industry is characterised by lumpy, long lived investments. Once built, new generation plant is likely to last for at least 40 years. The cap-setting process should also consider the need for new investment in generation plant, refurbishment and retirement of existing plant, and the cost and availability of low emission technologies;
- Be able to move in step with the evolution of low emission technologies, and their potential commercialisation and deployment;
- Be able to adjust flexibly to reflect future international obligations.

The Discussion Paper canvassed options for the length of time that permits are issued. A short cap and allocation period of say 5 years was considered unlikely to provide investors with sufficient certainty to make investments. However, a long term allocation of 30 years would be at the expense of flexibility. It was proposed that firm annual caps would be set for the first ten years of the scheme, and that every year the firm cap would be extended by another year. In addition, the upper and lower bounds of possible future caps are proposed to be identified for the second ten years of the scheme, and extended on a five-yearly basis. These provide the limits within which firm annual caps may be extended. It was also proposed that liable parties would be able to bank permits indefinitely, providing participants with compliance flexibility.

The discussion paper modeled three indicative scenarios:

- Scenario 1: Under this scenario, electricity generation emissions are capped at 176Mt in 2030, which is approximately the level of electricity generation emissions in 2000. It represents a 33%, or 88 Mt, reduction on forecast electricity generation emissions under business as usual in 2030, and a reduction of 5%, or 10 Mt, compared with emissions in 2005.



- Scenario 1a: This scenario is a variation on Scenario 1 that assumes the same cap (176 Mt), but with higher levels of energy efficiency, biosequestration offsets and demand side technological change. The main purpose of this scenario is to illustrate the extent to which the costs of achieving this cap could be reduced with complementary measures.
- Scenario 2: Under this scenario, electricity generation emissions are capped at 150 Mt in 2030, which is approximately the level of electricity generation emissions in 1997. It represents a 43%, or 114 Mt, reduction on forecast electricity generation emissions under business as usual in 2030, and a reduction of 19%, or 36 Mt, compared with emissions in 2005.

Australia's emissions are projected to be 782 Mt in 2030 under business as usual conditions. By comparison, emissions are 710 Mt and 695 Mt in 2030 in Scenarios 1 and 2, respectively.

The additional average weekly expenditure on electricity compared to business as usual over the period from 2010–30 varies by State. The price increase ranges are:

- \$1.00 per week in Victoria to \$3.20 per week in the Northern Territory for Scenario 1.
- \$0.70 per week in South Australia and Victoria to \$2.20 per week in the Northern Territory for Scenario 1a.
- \$1.20 per week in Victoria to \$3.60 per week in the Northern Territory for Scenario 2.

The price impact was less on the southern states (Victoria and South Australia) due to their relatively high level of connection to the gas networks.

In terms of the broader macroeconomic impacts, the implementation of the scheme would result in the level of GDP being down by less than 0.6% in level terms at 2030. It would take less than 3 months to recover from the reduction in GDP in 2030 in any scenario, although the economic impacts do vary by region. In contrast, the drought in Australia earlier this decade cost the economy \$13 billion (1.6% of GDP) and about 70,000 jobs by 2003.

With the implementation of the scheme, the coal-fired electricity sector is projected to grow at a slower rate than business as usual in all scenarios. Nevertheless, coal continues to be the dominant source of electricity, accounting for around 54% of electricity supplied (compared with 75% under business as usual). Other services linked to overall levels of economic activity and new investment, such as transport services, building products and cement manufacture, would be projected to grow slightly more slowly than in business as usual in all scenarios. The alumina and aluminium industry is not adversely affected by the rise in energy prices, as this has been offset by a free allocation of permits (modelled as a production subsidy).

### **Offsets**

The discussion paper proposed that activities that offset greenhouse emissions could generate 'offset credits'. Once created, an offset credit could be surrendered to make up the difference between a firm's total emissions covered by the emissions trading scheme and the number of permits that it holds at the end of the compliance period. Offset credits

therefore have an equivalent emissions value as a permit in the emissions trading scheme.

It was also proposed that credits created under the Clean Development Mechanism of the Kyoto Protocol be accepted as equivalent to other offset credits under the NETS. This would provide an important connection between the Australian and international carbon markets and act as an additional safety valve for the price of domestic abatement.

### **Permit allocation**

It was proposed that permits would be allocated in three broad tranches:

- Some permits would be allocated free to those existing generators estimated to be significantly adversely affected by the scheme;
- Some permits would be allocated free to firms in trade-exposed, energy-intensive industries (both existing and new);
- The remainder of permits would be auctioned. Auction revenue would be divided among the States and Territories on a basis yet to be determined, but in a manner that recognises the differing impacts of the scheme. This revenue could be used to fund assistance measures for others, such as households, regions and small business.

### **Institutional arrangements**

New governance arrangements would be required to implement a NETS and support its ongoing operation and administration, its registry system, and its reporting, compliance monitoring and enforcement regime. The clear preference of all the State and Territory Governments was for the Commonwealth Government to be involved. Preferred institutional options are based on Commonwealth Government participation and the use of existing institutional arrangements. In the event that the Commonwealth Government chose not to participate in the NETS, State and Territory Governments could establish a new, separate Ministerial Forum, Scheme Developer and Scheme Regulator to govern the scheme.

### **Linking with international schemes**

The Taskforce acknowledged that bilateral linking of the Scheme to other international schemes (such as the European Union Emissions Trading Scheme) might be desirable in the longer term, but that the principal objective should be to establish a strong domestic market. However, it was proposed that unilateral linking with the Clean Development Mechanism be established from the outset of the scheme. This would allow firms to effectively surrender Certified Emissions Reductions (CERs) towards their domestic obligations while preventing double counting of the reductions. It was argued that this approach has the advantage of incorporating Australia into the international carbon market while providing an additional 'safety valve' for prices of domestic offset credits and permits.

## **5.3 Responses to the NETS Discussion Paper**

With the release of the discussion paper outlined above, the Taskforce invited comment on all facets of the proposal. A cross-section of submissions from industry and community groups supporting or critiquing the scheme are presented below.

### **Insurance Australia Group**

IAG strongly supported the establishment of a cap and trade model and the direction taken in the discussion paper. IAG supported setting a target for greenhouse gas emissions reduction in Australia of at least 60% of 2000 levels by 2050. The caps in the NETS should be set low enough to achieve these targets for reduced emissions.

It was the view of IAG that the NETS should start in 2010 and from the outset should cover all stationary energy. IAG believes that offsets should be linked to international programs but the percentage of offshore activity should be limited to ensure a strong commitment to projects designed to meet Australia's targets for greenhouse gas emission reductions.<sup>38</sup>

### **BlueScope Steel**

BlueScope Steel acknowledged that climate change is real and is a critical global issue, although the nature and timeframe of its impacts are uncertain. However, it stated that if and when there is a national approach to emissions trading, it should only be implemented at the same time as other major trading partners and international competitors implement such a scheme. Otherwise the costs are likely to make Australian industry and manufacturers uncompetitive, and even uneconomic, in the medium to long-term. Furthermore, the scheme should exempt trade exposed industries such as BlueScope Steel.

BlueScope Steel noted that developing countries, including China, are not subject to the Kyoto Protocol. China is now the world's largest producer and consumer of steel products, making more steel each year than Japan, the United States, Russia and South Korea combined. In calendar 2005, China manufactured 349 million tonnes of steel products, dwarfing the Australian steel industry's total annual production of 7.5 million tonnes. Blue Scope Steel noted that the introduction of an emissions trading scheme in advance of universal action could affect the competitiveness of Australian trade-exposed, energy-intensive industries, if no mechanism were developed to prevent this. BlueScope Steel strongly supported the Scheme's proposition to allocate free emission permits to trade-exposed industries, and would not support the Scheme in the absence of such safeguards.<sup>39</sup>

### **WWF Australia**

WWF strongly supported the early introduction of a mechanism that will place a cost on greenhouse gas emissions and thereby provide a price signal for Australian economic activity to move towards a low emission future. WWF Australia considered that the Scheme is an appropriate and important initiative, made essential by the absence of action by the Commonwealth and, if appropriately structured, would be sufficient to demonstrate

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<sup>38</sup> Insurance Australia Group, *National Emissions Trading Scheme, Response to the Discussion Paper issued in August 2006*. See: [http://www.emissionstrading.net.au/data/assets/pdf\\_file/5138/Insurance\\_Australia\\_Group.pdf](http://www.emissionstrading.net.au/data/assets/pdf_file/5138/Insurance_Australia_Group.pdf), Accessed January 2007.

<sup>39</sup> BlueScope Steel, *Bluescope Steel's Submission In Response To The Possible Design For A National Greenhouse Gas Emissions Trading Scheme ("Nets"): A Discussion Paper Prepared By The National Emissions Trading Taskforce ("Taskforce")* December 2006. See: [http://www.emissionstrading.net.au/data/assets/pdf\\_file/5054/Bluescope\\_Steel.pdf](http://www.emissionstrading.net.au/data/assets/pdf_file/5054/Bluescope_Steel.pdf), Accessed January 2007.

the feasibility of an Australian emissions trading scheme and its effectiveness in helping Australia to reduce greenhouse gas emissions.

However, it did not agree on several key areas of the proposed scheme. Specifically, it strongly opposed the proposal for permits to constitute a property right rather than a licence to emit. WWF considered that auctions should be the primary means of permit allocation and that a clear time path should be established for moving to 100 percent auctioning. WWF also considered that the Discussion Paper failed to make a sound public policy case for the generous compensation it proposed for power plant owners by way of a partial free allocation of permits. Moreover, the specific mechanism proposed for determining the number of free permits and hence the level of compensation is likely to be costly to administer and prone to speculation.<sup>40</sup>

### **NSW Generators**

The NSW Generators, Delta Electricity, Eraring Energy and Macquarie Generation, own and operate a total of seven coal fired power stations in New South Wales, supplying approximately 88% of the State's electricity.

The NSW Generators noted that industry is looking for clarity regarding the long-term approach to greenhouse gas policy. The proliferation of technology-specific and overlapping state-based schemes is adding confusion and unnecessary costs to the investment process. The ongoing debate and discussion about a possible national trading regime represents an unmanageable risk for participants. Investors will only commit to multi-billion dollar projects when there is certainty as to the long-term obligations and rules relating to greenhouse gas emissions.

NSW Generators argued that the scheme should not just apply to the electricity generation sector. They argued that the narrower the coverage of the scheme, the higher the likely costs per unit of abatement. At a minimum, the scheme should also cover fugitive emissions attributable to fuels used in the stationary energy sector. The scheme should compensate existing generators for the adverse financial impacts of having to surrender permits to cover greenhouse gas emissions. The objective of an emissions trading regime is to provide a price signal for new investment that favours low emission generation. Existing plant has only limited scope to significantly improve thermal efficiency rates and investment decisions predated consideration of any emission trading regime.

A summary of the NSW Generators position is:

- Any cap-and-trade emissions trading scheme should begin with the widest possible coverage to ensure maximum economic efficiency and to avoid market distortions due to sectoral phase-in;

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<sup>40</sup> WWF Australia, *WWF's Response to the discussion paper A Possible Design for a National Greenhouse Gas Emissions Trading Scheme*. See: [http://www.emissionstrading.net.au/\\_data/assets/pdf\\_file/5277/WWF\\_Australia.pdf](http://www.emissionstrading.net.au/_data/assets/pdf_file/5277/WWF_Australia.pdf), Accessed January 2007.

- Any scheme cap should be set as part of Australia's national obligation under an international agreement. We do not support any unilateral cap placed solely or largely on the electricity generation sector.
- Early scheme start will not encourage renewable or clean generating technologies. It will force investment in gas fired plant which will result in both increased electricity prices and increased gas prices.
- The NSW Generators consider that the assumptions made in the economic modeling result in an unrealistically low cost to the economy.
- The NSW Generators would support a scheme that adequately compensates current market participants for profit impacts of scheme implementation.
- The NSW Generators support the use of offset credits as a way of minimizing compliance costs for all liable participants.
- The NSW Generators support the Taskforce's proposal to set the scheme penalty at a price that caps the cost of the scheme at an acceptable level but also encourages compliance.
- The NSW Generators support the proposal to allow the banking of permit credits by liable parties.
- The NSW Generators consider that the States should move towards a single national scheme that recognises the value of abatement projects created under existing greenhouse arrangements.<sup>41</sup>

### **Origin Energy**

Origin Energy stated that a national emissions trading scheme is the preferred policy mechanism to reduce greenhouse gas emissions because it will result in the lowest cost across the Australian economy. Their strong preference was for a scheme involving the Australian Government.

Origin supported the following:

- An early, formal signalling of the scheme through legislation, ahead of implementation;
- A start date as early as 2010, but no later than 2013;
- An emissions cap in line with a deep cuts aspirational goal for 2050;
- An emissions cap profile to reflect the prospects of deeper cuts via breakthrough technologies post-2020;
- A phased approach to coverage with initial focus on electricity generation followed by remaining stationary energy; inclusion of associated fugitive emissions; 5yr pre-warning of inclusion of remaining sectors
- A penalty that gives an incentive to act but also provides a clear upper bound on costs for liable parties;
- An initial free allocation of permits for existing generators sufficient only to compensate for loss of future shareholder value; these permits are not required to be returned in the event that the plant shuts or reduced production;

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<sup>41</sup> NSW Generators, *Submission to A Possible Design for a National Greenhouse Gas Emissions Trading Scheme*, See: [http://www.emissionstrading.net.au/\\_data/assets/pdf\\_file/5279/NSW\\_Generators.pdf](http://www.emissionstrading.net.au/_data/assets/pdf_file/5279/NSW_Generators.pdf), Accessed January 2007.

- A free allocation of permits for existing and new trade-exposed energy intensive plant on a year-by-year basis until an effective international scheme is implemented;
- The remainder of permits to be auctioned;
- No free permit allocation to new entrant power generators;
- Unconstrained volume of offsets to be included from non-covered sectors and approved international units (eg, Clean Development Mechanism);
- the treatment of geosequestration as abatement ie reduced emissions to the atmosphere; Origin does not support the current proposal in the discussion paper to treat geosequestration in a similar manner to biosequestration given that the former represents a direct reduction of emissions and the later is an offset in that the emissions are taken out of the atmosphere and it is thus not directly abatement;
- A design such that the Australian NETS can link with international schemes.<sup>42</sup>

### **Australian Conservation Foundation**

ACF is concerned that the scheme proposed will not only fail to deliver the necessary emission reductions, but will leave the governments exposed to massive future compensation. In particular, ACF is concerned that:

- The proposed targets are inadequate. ACF considered that emission reductions of 60%-90% below 1990 levels by 2050 are needed, together with at least 20% reduction by 2020. A scheme with inadequate targets is worse than no scheme;
- The scheme does not cover enough of Australia's emissions. This limits the environmental and economic efficiency of the scheme. The scheme should cover all emissions from all sectors;
- Offsets should not be included in the scheme. If the scheme coverage is broad, offsets are not required. Offsets also have high transaction costs.
- Permits should be auctioned, not allocated for free. Auctioning can provide revenue to fund transitional assistance for workers and the most adversely affected industries as well as other complementary measures. The number of certificates auctioned should be low, to avoid having to buyback certificates in the future.
- Permits should be a license, not a property right. Nobody has a 'right' to pollute the atmosphere. Issuing permits as a perpetual property right means the government must use public money to buy back certificates if an over allocation occurs, or if future climate science requires deeper cuts in emissions.

The Australian Conservation Foundation noted that emissions trading is no silver bullet. Complementary measures such as renewable energy targets and energy efficiency standards will be required in parallel with the scheme. The scheme will not correct all market failures, or overcome non-financial barriers to emission reductions.<sup>43</sup>

<sup>42</sup> Origin Energy, *Submission to A Possible Design for a National Greenhouse Gas Emissions Trading Scheme* See: [http://www.emissionstrading.net.au/data/assets/pdf\\_file/5338/Origin\\_Energy.pdf](http://www.emissionstrading.net.au/data/assets/pdf_file/5338/Origin_Energy.pdf), Accessed January 2007.

<sup>43</sup> Australian Conservation Foundation, *Submission to A Possible Design for a National Greenhouse Gas Emissions Trading Scheme* See: [http://www.emissionstrading.net.au/data/assets/pdf\\_file/5360/Australian\\_ConservationFoundation.pdf](http://www.emissionstrading.net.au/data/assets/pdf_file/5360/Australian_ConservationFoundation.pdf), Accessed January 2007.

## Rio Tinto

Due to its ‘least abatement cost nature’, Rio Tinto supported the concept of emissions trading as part of a comprehensive long-term policy approach to greenhouse gas abatement. However, Rio Tinto noted that a greenhouse gas emissions trading scheme will create a new class of assets worth billions of dollars. Thus, the commoditisation of emissions will have major impacts on the financial markets, specific industries, and on the wider economy. Unforeseen or arbitrary wealth transfers of a program on this scale could be devastating for affected industries, particularly if it distorts international competitiveness. Furthermore, investments and trading on this scale will entrench interests and may establish barriers to future innovations which offer alternative but competing solutions. Rio Tinto noted that, to be effective, the market must be protected against gaming and other market manipulation activity.

Rio Tinto considered that the following elements of the proposed scheme should be retained:

- Consideration of trade exposed energy intensive industries;
- Recognition of compensation for investments made prior to the scheme’s inception;
- Permit allocation. The Discussion Paper provided a starting point – further work will be required;
- Inclusion of domestic and international offsets;
- Consideration of overseas experience;

However, Rio Tinto identified the following areas that require further work before a trading scheme is implemented:

- Industry coverage – the current proposal will distort investments by subsidizing gas at the expense of coal through differential phasing and discriminatory generator capacity thresholds. The scheme should start with the entire stationary energy sector;
- Further transition and adjustment measures to reduce the impact on industries and the economy;
- Further scheme detail to: address market liquidity and integrity; develop permit allocation methods; and develop independent governance arrangements;
- Commonwealth involvement for tax issues and international linkages.<sup>44</sup>

## 5.4 The National Emissions Trading Scheme - Conclusion

It is evident from the submissions to the NETS discussion paper that there is a general level of support for such an emissions trading scheme. It would appear that industry has accepted that a carbon constrained future is more likely than not, and that an emissions trading scheme has the potential to offer a least cost basis to achieve this. A persuasive argument of business stakeholders is the need for certainty, and the debate between the Federal and State governments on the need for an emissions trading scheme has not helped in this area. Conservation groups, whilst generally supportive of the proposed scheme,

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<sup>44</sup> Rio Tinto, *Submission to A Possible Design for a National Greenhouse Gas Emissions Trading Scheme* See: [http://www.emissionstrading.net.au/\\_data/assets/pdf\\_file/5384/Rio\\_Tinto.pdf](http://www.emissionstrading.net.au/_data/assets/pdf_file/5384/Rio_Tinto.pdf), Accessed January 2007.



have argued that emission permits should be issued as a licence rather than a property right. In 1998, an inquiry by the House of Representatives Standing Committee on Environment, Recreation and the Arts, chaired by the Hon Ian Causley MP, came to the same conclusion. In a report on the regulatory arrangements for greenhouse gas trading, the Committee made two recommendations. The first one was:

The Committee recommends that emission permits be licences to emit, which are issued on terms that are clear, understandable, and known. Permits should not confer property rights.<sup>45</sup>

If, (as proposed) permits are a property right, the House of Representatives Committee was aware that the Government would be vulnerable to compensation claims if the national entitlement to emit was diminished. This may happen with improved understanding of the impact of climate change and if international negotiations adopted more restricted emission targets.

## 6.0 RECENT NATIONAL DEVELOPMENTS

The Australian government has been a strong critic of the Kyoto Protocol, and has refused to sign or ratify it. Recently Prime Minister Howard stated: “We’ve made it very clear that we won’t ratify the Kyoto agreement – we took that decision some years ago because we feared that ratifying that agreement ... could have damaged the comparative advantage this country enjoyed as a result of our abundance of fossils fuels... We do need to find a new global solution ... and that must include all the major emitters.”<sup>46</sup>

Consistent with this approach to climate change, the Commonwealth government has until recently rejected calls for any form of an emission trading scheme. However, on 13 November 2006 the Prime Minister announced that the Government will establish a joint government / business task force to examine what form an emissions trading system would look like. The Prime Minister stated: “I think we all recognise that we have to examine in the time ahead how we might devise an emissions trading system which properly cares for and accommodates the legitimate interests, and therefore maintains, the competitive advantage that this country enjoys...”<sup>47</sup>

The Prime Ministerial Task Force on Emissions Trading was subsequently announced on 10 December 2006. Comprised of government and business members, the Task Force has the following Terms of Reference:

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<sup>45</sup> Parliament of the Commonwealth of Australia, House of Representatives Standing Committee on Environment, Recreation and the Arts, *Regulatory Arrangements for Trading in Greenhouse Gas Emissions. Interim Report.* August 1998.

<sup>46</sup> Hon John Howard MP, *Transcript of the Prime Minister Hon John Howard MP Address at the Business Council of Australia Annual Dinner, Sofitel Wentworth, Sydney.* 13 November 2006. See: <http://pm.gov.au/news/speeches/speech2246.html>, Accessed November 2006.

<sup>47</sup> Hon John Howard MP, *Transcript of the Prime Minister Hon John Howard MP Address at the Business Council of Australia Annual Dinner, Sofitel Wentworth, Sydney.* 13 November 2006. See: <http://pm.gov.au/news/speeches/speech2246.html>, Accessed November 2006.



Australia enjoys major competitive advantages through the possession of large reserves of fossil fuels and uranium. In assessing Australia's further contribution to reducing greenhouse gas emissions, these advantages must be preserved.

Against this background the Task Group will be asked to advise on the nature and design of a workable global emissions trading system in which Australia would be able to participate. The Task Group will advise and report on additional steps that might be taken, in Australia, consistent with the goal of establishing such a system.<sup>48</sup>

The Task Force is required to report to the Prime Minister by 31 May 2007. The lack of any non-government environment representation on the Task Force was criticised by many.<sup>49</sup> Prime Minister Howard argued that the group had no environmental representation because he wanted to 'involve the industry'.<sup>50</sup> At its first meeting, the Task Force decided it would issue a discussion paper in February 2007 to which interested parties, including conservation groups, would be invited to respond.

The Task Force released an issues paper on emissions trading on 7 February 2007. The paper noted that whilst Australian demand for electricity is forecast to more than double by 2050, the work of the Intergovernmental Panel on Climate Change has led governments to accept that action to mitigate the emission of greenhouse gases is necessary. Whilst Australia is on track to achieve its Kyoto Protocol target of limiting emissions to 108% of 1990 levels in the period 2008-2012, without any further action strong economic growth is expected to result in emissions rising to 127% of 1990 levels by 2020.<sup>51</sup> The size of the task facing Australia is evident by reference to Figure 2. It shows that a key factor limiting Australia's emissions from 1990 to 2010 was the impact of reduced landclearing. This will not be repeated, and hence the abatement effort will fall onto other areas of the economy.

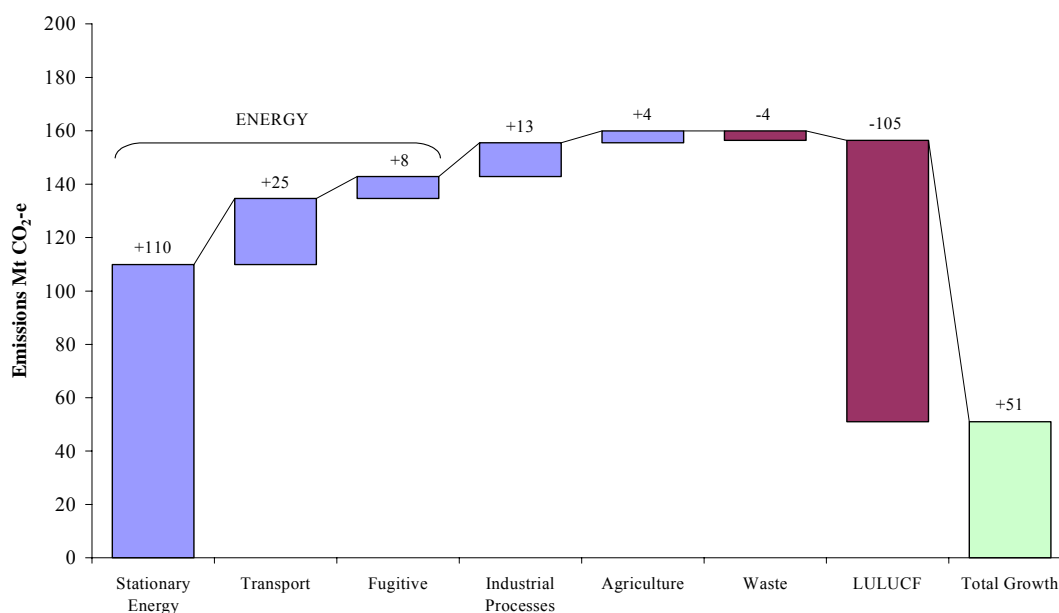
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<sup>48</sup> Hon John Howard MP, *Media Release - Prime Ministerial Task Group on Emissions Trading*. 10 December 2006. See: [http://www.pm.gov.au/news/media\\_releases/media\\_Release2293.html](http://www.pm.gov.au/news/media_releases/media_Release2293.html), Accessed December 2006.

<sup>49</sup> "Industry dominated emissions taskforce" in *The Sydney Morning Herald*, 11 December 2006.

<sup>50</sup> "Green groups get a say on greenhouse plan" in *The Sydney Morning Herald*, December 20 2006.

<sup>51</sup> Task Group on Emissions Trading, *Issues Paper*. 7 February 2007. See: [http://www.pmc.gov.au/emissionstrading/docs/emissions\\_trading\\_issues\\_paper.doc](http://www.pmc.gov.au/emissionstrading/docs/emissions_trading_issues_paper.doc), Accessed February 2007.

**Figure 2: Sectoral contribution to Australian emissions growth 1990-2010**

Note: Fugitive emissions are emissions from the extraction of coal, oil and gas. LULUCF stands for Land Use, Land Use Change and Forestry. It includes the one-off impact of reduced landclearing.

Source: Task Group on Emissions Trading, *Issues Paper*, 7 February 2007. See: [http://www.pmc.gov.au/emissionstrading/docs/emissions\\_trading\\_issues\\_paper.doc](http://www.pmc.gov.au/emissionstrading/docs/emissions_trading_issues_paper.doc), Accessed February 2007.

The Task Force noted that emissions trading is a more flexible market-based policy tool than imposing a carbon tax on industry. The issues paper briefly canvassed some options for a global trading scheme – such as national or regional schemes being linked together, and sought comment on what would constitute a workable global emissions trading scheme from the Australian perspective. In turn, comment was sought on the introduction of a domestic emissions trading scheme, and whether this was desirable before an international scheme was established. It concluded with comments about the multiplicity of greenhouse gas abatement programs in Australia, and whether an emissions trading scheme could rationalise some of these programs and promote low emission technologies.<sup>52</sup>

Prime Minister Howard now seems convinced that an emissions trading system is required. On 5 February 2007 he stated: “Market mechanisms, including carbon pricing, will be integral to any long-term response to climate change.... But the answer is not knee-jerk responses that harm the national interest.”<sup>53</sup>

<sup>52</sup> Task Group on Emissions Trading, *Issues Paper*, 7 February 2007. See: [http://www.pmc.gov.au/emissionstrading/docs/emissions\\_trading\\_issues\\_paper.doc](http://www.pmc.gov.au/emissionstrading/docs/emissions_trading_issues_paper.doc), Accessed February 2007.

<sup>53</sup> “PM says Carbon Trading Part of Climate Change Solution.” In *ABC Online News*, 5 February 2007. See: ABC NewsOnline, <http://www.abc.net.au/news/newsitems/200702/s1840011.htm>, Accessed February 2007.

Federal Opposition Leader Kevin Rudd says Labor already backs carbon trading and the Government has been left behind. He was reported as saying: "Labor more than a year ago proposed a national carbon trading scheme and Mr Howard has rejected this all along. Now he appears to be backflipping. If Mr Howard is now backflipping on our proposal, going back more than a year, for a national emissions trading scheme, then of course we welcome that. But we question his political commitment to this, given it comes six months before an election from a Government which has been filled with climate change sceptics all along."<sup>54</sup>

## 7.0 CONCLUSION

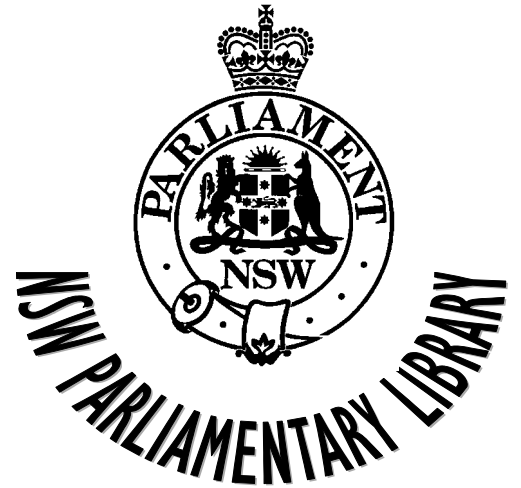
If it is accepted that society must reduce its greenhouse gas emissions, then there are a variety of ways for governments to ensure that this occurs. Traditionally, governments have controlled pollution using 'command and control' regulatory techniques. Whilst this regulatory approach has its place, it is now considered that market based mechanisms, such as an emission trading system, provide pollution control for the least abatement price. This is one of the fundamental reasons why industry, having accepted the reality of a carbon constrained future, supports the introduction of an emissions trading system.

The European Union Emissions Trading System has shown that with the introduction of such a system, electricity prices will increase. Economic modelling for an Australian scheme has shown a similar response. How such a scheme compensates those most affected by the scheme, and prevents 'windfall' profits for others, is likely to influence its acceptance by the Australian public. However, it is unlikely at this stage that any major political party will call for a personal carbon credit card, similar to those being assessed in the United Kingdom.

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<sup>54</sup> "PM says Carbon Trading Part of Climate Change Solution." In *ABC Online News*, 5 February 2007. See: ABC NewsOnline, <http://www.abc.net.au/news/newsitems/200702/s1840011.htm>, Accessed February 2007.

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