

AUSTRALIAN LABOR PARTY

DISSENTING REPORT

About the inquiry

The Senate Select Committee on Climate Policy has thoroughly examined the *Carbon Pollution Reduction Scheme Bill 2009*, related bills, climate change science and the overall Government response to climate change.

The Committee heard ten days of evidence and 188 witnesses, in Canberra and in five state capitals, with a number of these witnesses appearing multiple times. We heard from witnesses representing Government departments, industry associations, businesses, trade unions and community organisations, and including leading scientists and economists. This included more than 100 witnesses representing mining, industry, farming, energy supply, financial and commercial interests.

The committee received over 8,000 submissions from organisations and individuals (not counting more than 6,000 form letters).

The Economics Committee is also currently concluding an inquiry into the *Carbon Pollution Reduction Scheme Bill 2009* and related Bills as introduced into the Senate and is due to report at the same time as this Select Committee Inquiry.

This is in addition to inquiries examining related issues of energy sustainability and supply including the Government's solar rebates scheme, feed-in tariffs, and fuel and energy issues.

There is no weight to any arguments that there has not been adequate opportunity for the Senate to examine the Carbon Pollution Reduction Scheme (CPRS) bills or for the Australian community to present their views to the Senate

We would like to thank the Committee's Secretariat for their work in ensuring the smooth running of the hearings. We thank all those who appeared before the Committee and made submissions. We believe that the Committee's work has once again highlighted the necessity of taking strong, effective action on climate change.

We are not surprised that the Committee has been unable to make a unanimous report to the Senate. It became evident during the hearings that there is a deep division within the Committee: between the majority of members, who believe that urgent action is needed to combat dangerous climate change in Australia, and the Liberal and National Senators, who do not.

The Liberal and National Senators either do not believe in the reality of the threat posed by dangerous climate change to Australia or they believe that Australia should wait for an international agreement on emissions reduction before taking any action.

The incapacity of the Liberal and National parties to reach agreement on a way forward in tackling climate change has been detrimental to Australia's ability to take action on climate change.

It is unfortunate that the leader of the opposition, Mr Turnbull, has been unable to convince the Coalition parties that it is in the national and global interest to adopt a realistic and progressive approach to the global challenge of climate change. Political leadership is needed from Mr Turnbull to stare down the climate sceptics and deniers within the coalition. So far he has not been up to the task and he has allowed this sceptical attitude towards the well founded theory of anthropogenic climate change, supported by the great majority of the world's respected scientists, to inhibit the coalition from developing a sound policy that takes responsible action to tackle climate change. Climate change is the greatest political, economic, environmental and social challenge facing the world and political leaders must not abdicate their responsibility to future generations for political expediency and personal political gain.

Within the majority of the Committee that supports action, however, there are also differences – between the Labor Senators, who support the CPRS bills as proposed by the Government; the Greens Senator, who supports much higher, and in our view unachievable, targets and opposes some particular aspects of the scheme; and the Independent Senator, who believes we should be pursuing a different scheme and strategy to reduce emissions.

Summary of Government Senators' position

Government senators believe that the urgency of the situation in which Australia finds itself, after a decade of inaction on climate change, requires that a decision must be made by the Parliament, this year. It is in the interests of the environment, the economy, and future generations that we put in place a scheme that will enable Australia to reduce its greenhouse gas emissions before irreversible damage is done to our environment and our economy. We also believe that an emissions trading scheme is the best way to do this, because it is a scheme based on market mechanisms rather than taxation or Government regulation.

We believe that the targets for cutting emissions set out in the CPRS are the most realistic and attainable targets for Australia at this time, and will, if put into legislation, enable Australia to go to the UN Climate Conference in Copenhagen in December in a strong position to argue for an international agreement to cut global emissions to the degree necessary to stabilise the Earth's climate before the warming of the planet becomes irreversible and catastrophic.

The CPRS is the Government's central policy that will drive the economic transition required to tackle climate change, but it is not the only part of the Government's response. The CPRS will be part of a comprehensive strategy to tackle climate change that includes a range of measures. The Parliament will shortly consider an expanded Renewable Energy Target that will take Australia's renewable electricity generation to

20% by 2020. The design of the Renewable Energy Target (RET) was agreed between the Commonwealth and state governments after detailed consultation with industry, including extensive modelling of the costs and benefits of the expanded target. This measure is an important complement to the CPRS and should have been implemented years ago.

Alongside the CPRS, the Government is also proposing a \$2.7 billion Climate Change Action Fund to help businesses make the transition to a low-carbon economy. We believe that the Government should fast-track detailed design of the Climate Change Action Fund once the CPRS legislation has been passed by the Parliament in order to help Australian businesses play their full part in creating the low-pollution jobs of the future.

We are aware that the transition from the New South Wales Greenhouse Gas Reduction Scheme may adversely affect certain electricity generation projects that use waste coal mine methane. The committee affirms its support for the Government to continue to work with the governments of New South Wales and the Australian Capital Territory to clarify transitional arrangements for such projects, noting that a carbon price is essential for the ongoing support of electricity generation from low-emission sources.

Australia's carbon pollution needs to be reduced from as many sources as possible. While agriculture has been excluded from the CPRS until no earlier than 2015, we believe the Government should closely monitor the impact of the CPRS on the agriculture sector, including processing industries, to ensure that any perverse outcomes are addressed. We welcome the Government's establishment of a ministerial roundtable to look at policy options for reducing carbon pollution in the agriculture sector, and believe that the Government should continue to fund research into reducing agricultural carbon pollution and preparing the agriculture sector for the impacts of unavoidable climate change.

Emissions reductions from the land sector will play an important part in reducing Australia's total human-induced carbon pollution. We welcome the Government's efforts to improve international land sector rules in a post-2012 agreement, to provide a stronger, long-term basis for an international climate change response which recognises the full mitigation potential of the land sector.

We also welcome the Government's ongoing commitment to fund research into soil carbon and biochar, and to explore the role that soil carbon might play in the international post-2012 outcome.

In the light of these considerations, we therefore do not support any of the recommendations supported by some or all of the other members of the Committee. We believe that all of these recommendations suffer from one of two deficiencies. Either they deal with matters which the Government is already proactively addressing, or they propose actions which would impose further and unacceptable delays in the implementation of an emissions trading scheme.

We acknowledge that the measures contained in the Government's proposals are far-reaching and will involve substantial changes for many Australian industries, businesses and individuals. We point out, however, that we have now had many years of debate on this issue, particularly since the transparent policy development process undertaken by the Government following on from the Garnaut Review. This process saw the Green Paper, White Paper and Exposure Draft Legislation released for business and community consultation before the legislation was brought into Parliament. We have also had two recent Senate inquiries and the most comprehensive modelling ever undertaken by Treasury on the impacts of both action and inaction.

It is therefore impossible to argue with any credibility for further delay, on the basis of a lack of consideration and consultation on behalf of the Government. It is our firm view that, based on the evidence to this committee and other Senate inquiries, the case for the Government's approach has been well made. We believe that the time for more reports, more modelling, more debate, has passed, and that the time for action in the national interest is upon us.

Australia needs to act on climate change

There is an overwhelming consensus among climate scientists, both in Australia and internationally, that climate change caused by human activity is posing a major and rapidly escalating threat to the Earth's physical environment, to the economies of every country, and ultimately to the sustainability of human life on this planet.

The Committee went to great pains to hear from all points of view among the scientific community. We did not hear or receive one piece of testimony from a scientist with qualifications and experience in the field of climate science which dissented from this view. The "climate sceptics" had a golden opportunity at the Committee's hearings to challenge this consensus, and they were not able to produce one qualified climate scientist to do so.

Instead we heard from a retired geologist and an engineer. With due respect to these witnesses, we do not believe that their testimony presented any effective scientific challenge to the views of the overwhelming majority of qualified climate scientists. The points they made have been refuted many times by climate scientists, and were refuted again at our hearings.

Australia is uniquely vulnerable to the effects of escalating climate change. The Garnaut Review found that, if greenhouse gas emissions continue unchecked during the first half of this century, the resultant rise in temperature will have a severe impact on Australia's environment and economy.

By mid-century, unless action is taken, rising temperatures and declining rainfall will result in major declines in agricultural production across the country, and output from irrigated agricultural output in the Murray-Darling Basin will halve. We will also see the destruction of the Great Barrier Reef by mid-century. Australia's alpine environments will largely cease to exist. Rising sea levels will destroy many beaches and severely affect coastal communities. Australia's tourist industry and the

communities which depend on it would be devastated. Tropical diseases and pests would spread across large areas of Australia, further reducing agricultural production and endangering animal and human health.¹

At the last election, both major parties promised to introduce an emissions trading scheme to reduce Australia's carbon pollution. Mr Turnbull, when he was Environment Minister in the Howard Government, supported an emissions trading scheme. He told the National Press Club in May 2008: "The emissions trading scheme is the central mechanism to decarbonise our economy." Since then he has steadily retreated from this position, apparently under pressure from climate sceptics in his own party and from the National Party. Nevertheless, the Australian people voted overwhelmingly in 2007 for parties committed to an emissions trading scheme. Every poll shows that the Australian people continue to support strong action against climate change. The Government has a mandate to act on this matter, and should do so without further delay. The Australian people will judge harshly those parties or individual legislators who place our country's economic and environmental future at risk by obstructing action on such a vitally important issue.

The Rudd Government's CPRS sets realistic and attainable targets for reducing Australia's greenhouse gas emissions, targets which will enable Australia to act independently, while providing leadership and working to achieve an international agreement on reducing emissions. The current scheme is in fact similar to the model put forward by the former Government's Prime Ministerial Task Group on Emissions Trading headed by Dr Peter Shergold, and adopted as policy by the Howard Government.

The current scheme, like that proposed, but not acted on, by the previous Government, seeks to reduce greenhouse gas emissions in a way which minimises the impact on employment, investment and the standard of living of the Australian people. It seeks to do so at the lowest cost to the economy.

Treasury modelling demonstrates that it is possible to take strong action to reduce carbon pollution while preserving growth in incomes and employment across the economy. The Government, as part of its consultation processes with business and the community, announced some changes to the scheme, which we welcome. Our view is that the Government's scheme as it now stands will ensure robust growth in the Australian economy and should be passed by the Senate.

Deferral of action and claims of unilateralism

We do not accept the view that Australia should wait until there is an international agreement on climate change before taking action. We also reject the view that Australia will be alone in taking such action. A global agreement to cut greenhouse

1 UN Food and Agriculture Organisation, *Climate Related Transboundary Pests and Diseases*, February 2008, page 2

gas emissions is the most desirable way to proceed. Nevertheless, other countries are acting in advance of such an agreement, and so should we.

When Australia's scheme comes into effect, we will be joining many other countries which are implementing such a scheme. Many countries already have in place domestic policies and measures which seek to reduce their greenhouse gas emissions.

A number of the major economies have set emissions reduction targets and have in place, or are developing emissions trading schemes as their central emissions mitigation policy. Other developed economies are already adapting to a carbon-constrained future. The countries of the European Union have centres of expertise in fuel-switching, using biomass in coal-fired electricity generation, and are working with developing countries through the Clean Development Mechanism under the Kyoto Protocol. Carbon prices feature in all major investment decisions relating to plant and infrastructure in Europe. Europe is adding significant new wind energy capacity each year.

Important research is being undertaken around the world on carbon capture and storage technology, not only for the coal industry but for other high-emission industries where there is limited or no capacity to reduce carbon emissions through changes to the production processes.

We reject the view, frequently expressed by some members of the Committee and also by some witnesses, that because Australia is responsible for only 1.5% of the world's greenhouse gas emissions we can afford to wait until there is an international agreement. Australia is in fact in the top 20% of emitters in absolute terms.²

If all the countries which emit less than Australia were to follow this logic and do nothing, that would mean that 20% of the world's greenhouse gas emissions would continue unchecked. As a wealthy country with one of the world's highest *per capita* levels of greenhouse gas emissions, Australia has an obligation to act.

Developing countries such as China and India have made it clear that they are not willing to make the sacrifices necessary to reduce their emissions unless the developed countries do so as well. Ethically, we cannot argue with that view, since the current climate crisis was caused by the unrestrained consumption of fossil fuels by the developed countries – not least Australia. Even if we did not accept the logic of that position, it remains a political fact. The Indian High Commissioner recently said specifically that India will not act if Australia does not.³

Evidence from the Department of Climate Change demonstrates that, far from acting unilaterally, Australia is in fact lagging behind many countries in dealing with

2 United Nations Framework Convention on Climate Change, Greenhouse Gas Inventory Data - Detailed data by Party, <http://unfccc.int/di/DetailedByParty.do>

3 'Why should we suffer over carbon emissions, asks India', *The Age*, 27 May 2009

greenhouse gas emissions. (*We have presented this information as an appendix to this report.*)

Our targets are realistic and attainable

Many people are calling for higher targets than those contained in the scheme proposed by the Government. We listened carefully to the evidence presented by environmentalist groups and others who hold this view. Our view, however, is that the targets set out in the CPRS are the highest which are realistically attainable in Australia in the current circumstances while maintaining economic growth, job creation, improved standards of living and a reductions in greenhouse gas emissions that meets meaningful environmental goals.

Australia is a heavily carbon-dependent economy, and that cannot be changed overnight, or even in a few years. If there is an international agreement to reduce emissions by 25% by 2020, Australia will be bound by that agreement and will take steps to meet our international commitments.

We point out again that this urgency has been imposed on Australia by the failure to act on climate change over the decade 1997-2007, when the previous Government was in office. Those who were responsible for that inaction are in no position now to criticise the current Government for deciding to take decisive action.

Why we support the Carbon Pollution Reduction Scheme

Some critics of the CPRS assert that Australia should adopt an alternative approach to reducing emissions such a carbon tax, an "emissions intensity" approach or a hybrid model. We listened carefully to arguments on this issue. We are not persuaded that any of them are superior, either in terms of the outcome delivered or in terms of the impact on the Australian economy. To abandon the CPRS now and switch to some other model would entail years of further delay, for no clearly demonstrated benefit. Emissions trading emerging as the dominant policy for reducing carbon pollution around the world. By introducing an emissions trading scheme, Australia is joining a growing group of countries that have developed or are developing similar schemes.

Abandoning the CPRS and adopting some other approach would isolate us from the emerging world consensus about the best way to deal with the challenge of climate change. Australia's international climate change obligations are all framed in terms of quantity reductions in emissions. For that reason, the CPRS involves setting a quantitative target for emissions reductions. Under other approaches such as the McKibbin-Wilcoxon model or a carbon tax, the Government would not be able to control directly the volume of emission reductions or provide support to the community and business.

The most established emissions trading scheme is the 27-member European Union Emissions Trading Scheme, introduced in 2005. The EU-ETS is currently in its second phase (which runs from 2008 to 2012). In the United States, President Obama has confirmed he is committed to the introduction of a cap-and-trade emissions

trading scheme to reduce greenhouse gas emissions by 80% below 1990 levels by 2050. A draft Bill to establish an emissions trading scheme is progressing through the US Congress. The New Zealand parliament passed legislation in September 2008 introducing a mandatory national cap and trade emissions trading scheme. The New Zealand Government is currently reviewing the design of its emissions trading scheme, but has reaffirmed its commitment to emissions trading.

The Opposition has argued that Australia should wait until after the United States has passed emissions trading legislation, because it will be the "benchmark" for emissions trading schemes around the world. We reject this view. The CPRS has been designed to suit Australia's economy and to allow our scheme to link with other schemes internationally. It will form part of a network of linked emissions trading schemes around the world.

Some have asserted that the current US draft bill provides more assistance to emissions-intensive trade-exposed industries than the Australian scheme does. This is incorrect. The Waxman-Markey draft bill has set a hard cap on allocations to these industries at 15% of total permits in 2014. The number of permits that will be allocated to these industries over subsequent years will be directly linked to the decline in the US cap on emissions, with no provision for increased allocations in relation to growth in these industries. The Waxman-Markey bill does not give more certainty to trade-exposed firms than does the Carbon Pollution Reduction Scheme.

The CPRS legislation provides sufficient flexibility to the Minister to set the scheme caps and gateways by regulation after agreement is reached at the UN Climate Conference in Copenhagen. In addition, the Australian scheme – including levels of assistance to trade-exposed industries – will be periodically reviewed in light of international developments.

The scheme will not damage the Australian economy

Opposition members of the Committee argued that the CPRS will cause unacceptable damage to the Australian economy, particularly to export industries and to carbon-intensive industries such as coal-mining, electricity generation and cement manufacturing. We do not share this view. Although we acknowledge that the necessity to reduce greenhouse gas emissions poses serious challenges to these and other industries, we believe that with appropriate assistance all these industries, and the economy as a whole, will adapt to the requirements of a carbon-constrained economy, and that the economy as a whole will continue to have robust growth.

We note that Treasury modelling presented to the Committee showed that the Australian economy will continue to grow strongly as we reduce carbon emissions. It also showed that the earlier Australia acts, the lower the cost of action will be. Conversely, the longer we delay, the more damage we risk to the Australian economy. We know from the Treasury modelling that many of Australia's key industries will become more, not less, competitive, in a carbon-constrained world.

We accept the evidence put before the Committee that when the CPRS is in place, average annual GNP growth will only be one tenth of one percent less than it would be if no action was taken to tackle climate change. In all scenarios modelled by Treasury, total employment in the economy grows strongly over the years to 2020 and 2050 with the CPRS. We also note the CSIRO's modelling, which concluded that achieving a rapid transition to sustainability would have little or no impact on national employment.⁴

Critics of the Government's scheme have been very selective in their use of the economic evidence put before this and other inquiries into the Carbon Pollution Reduction Scheme. While they have been quick to highlight claims made by some industry lobbyists that the scheme will damage some industries, they have ignored testimony from industries which will benefit from the Scheme.

In particular they have ignored the witnesses who noted that the Scheme will stimulate a rapid growth in "green jobs," not only by creating new industries but through the "greening" of traditional industries. Dr Heinz Schandl of the CSIRO told the Senate Economics Committee inquiry:

The number of jobs will grow, both in business-as-usual and in a scenario which takes into consideration all the things that have been described in the green paper that would happen in the emissions trading scheme. Overall, the number of jobs will increase over the next two decades—2.5 to 3.3 million new jobs, and 230,000 to 340,000 of these new jobs are in those sectors which we have identified as high-impact sectors, with regard to resource use, energy use and emissions.⁵

On 4 May, the Government introduced a range of measures to respond to the global recession, including a global recessional buffer applied to the free permits for emissions-intensive trade-exposed industries, a one-year delay to the start of the scheme, and a one-year fixed price period. We welcome these measures, which provide further transitional support to allow businesses to adjust to a carbon-constrained economy.

Climate policy and employment

On 22 May, the Minerals Council of Australia released a report it had commissioned from Concept Economics; the aim of which was to "address the lack of sub-sector and local community impacts and to provide a realistic picture of the impact of the proposed ETS on economic activity and jobs at a local level in regional Australia –

4 Dr Heinz Schandl, Senior Science Leader, CSIRO Sustainable Ecosystems, *Senate Economics Committee Hansard*, 25 March 2009, pp. 24–25.

5 Dr Heinz Schandl, Senior Science Leader, CSIRO Sustainable Ecosystems, *Senate Economics Committee Hansard*, 25 March 2009, p. 33.

focusing on the employment impact in the minerals sector."⁶ The report gained widespread media coverage, much of it alarmist and highly misleading.

The source of much of the inaccurate reporting of the Minerals Council report was a media release issued by the Minerals Council on the evening before the release of the report. According to the media release:

The Concept Economics modelling shows that 23,510 direct jobs will be lost across Australia's minerals industry by 2020 and 66,480 by 2030. The 2020 figure represents an 11% drop in overall employment in the minerals sector while the 2030 result is a 24% increase.⁷

However the report itself says:

It is estimated that there will be approximately 23,510 less people employed in the Australian minerals industry due to the imposition of the proposed ETS *than would have otherwise been the case*. This represents a fall in employment of 11% relative to the reference case.⁸

The Chief Executive Officer of the Minerals Council, Mr. Mitchell Hooke was questioned about this apparent definitional confusion during a hearing of the Senate Economics Legislation Committee held in Canberra on 29 May:

Senator PRATT—Mr Hooke, you have reported on your website a growth of about 86,000 jobs from 2008 to 2020. Is that the business as usual case that Dr Fisher was using?

Dr Fisher—I am unaware of what is on the Minerals Council website. My reference case is the reference case that is generated by our model.

Senator PRATT—What were the numbers in your reference case?

Mr Hooke—Pretty damned close.

Dr Fisher—I do not know what those numbers are now.

Senator PRATT—If I take 86,000 jobs minus 23,000 jobs I have still got a growth of about 63,000 jobs in that period across the sector.

Mr Hooke—Let us go back and do them, since you have directed the question to our work, which is a bit hard for Dr Fisher. We had the National Institute of Labour Studies give us an estimation of what numbers of jobs we would need to create if we were to maintain market share. As a 2020 Vision project analysis we said, 'If we were to meet projected global demand by 2020 and Australia was to increase its supply, what level of supply would we need to increase and what would that mean in terms of

6 *The Employment Effect on the Australian Minerals Industry from the Proposed Carbon Pollution Reduction Scheme in Australia*; Report prepared for the Minerals Council of Australia by Concept Economics, 21st May 2009; p.4.

7 *23,510 Jobs Lost in the Minerals Industry Under Emissions Scheme*; Minerals Council of Australia media release, 22nd May 2009

8 Minerals Council report; op cit p.13 (emphasis added)

jobs? ' They came out with a figure of 86,000. Back then it was on about 120,000-plus people we employed. When you put that 86,000 on a projected basis on top of the 142,000, which is an increase over the last five years of some 60,000-odd jobs already, and then you look at what Dr Fisher has done and you say, 'If there's an 11% fall relative to the reference case' and you add the figures together, they are actually not far off being similar.

Senator PRATT—That goes back to the point. What has been reported in the media are massive job losses, but we keep losing the tagline relative to what would otherwise have been the case, which is that 86,000 jobs.

Mr Hooke—That is our work. You asked me how it related to Dr Fisher's work. I am saying it is approximate. You cannot put words into Dr Fisher's work.

Senator PRATT—No, but whatever your relative baseline is we are still looking at growth across the sector.

Mr Hooke—With great respect, we are not suggesting this is scorched earth. We know we are going to continue to grow.⁹

While there remains some uncertainty about just what the Minerals Council's employment reference case is, on the conservative side it appears to be aggregate employment growth of around 80,000 new jobs in the minerals sector to 2020 in a business as usual scenario.

It is clear from the exchange above and from any reasonable reading of the Minerals Council report that, contrary to alarmist predictions of major job losses in the minerals sector relative to today, employment in the minerals sector in the period to 2020 is likely to grow by the order of 55,000 to 60,000 jobs. Applying the multiplier adopted by the Minerals Council in its report, total employment in regions reliant on mining and processing would grow, at a conservative estimate, by a further 110,000 jobs.

It is misleading to present potential future jobs that are not created in one sector of the economy as "jobs lost". To do so not only offers a misleading picture of the effects of an ETS, but fails to take account of the fact that capital and employment moves between industries and regions all the time. Indeed, the available evidence suggests that the recent mining boom resulted in significant movement of labour from all over the country into regions with high levels of mining activity, resulting in skill shortages in other industries and regions.

The capacity of the labour market to adapt to structural change appears to be ignored in much of the debate about the CPRS. In the decade to November 2007, employment in rural industries dropped by almost 100,000; employment in manufacturing dropped by almost 50,000 and employment in the wholesale trade dropped by 35,000. Yet over this period the unemployment rate fell from 8.5% to 4%. These sectoral changes were brought about by a range of factors – public policy, drought, changed capital flows,

international competition, to name just a few – all of which bring about structural change in the wider economy and result in the relative share of employment changing from one sector to another.

While not everyone will welcome these changes, there are many actions governments can take to cushion the transitional effects of such changes. The Government is taking such action, providing very substantial assistance to the mining industry, especially coal mining, to adjust to change in the relative price of their products. The Government is providing \$100 million to accelerate the deployment of commercial scale carbon capture and storage projects through the Global Carbon Capture and Storage Institute and \$2.4 billion in Commonwealth funding for carbon capture and storage that will help leverage \$1 billion in industry funding and a further \$500 million in state government funding. In addition, the Government has outlined \$750 million in transitional assistance targeted at those "gassy" coal mines that will incur higher than normal carbon price liabilities.

Throughout the inquiry, Coalition Senators and others have sought to downplay and ridicule the very significant growth in jobs throughout the economy that will occur as a result of the transition to a low carbon economy. However, many witnesses and submitters to this and other Senate Committee inquiries touching on this subject have spoken of the potential for jobs growth under an ETS regime and a mandatory renewable energy target:

There are very significant opportunities for enterprise and employment, provided a signal is sent to assure people who might be prepared to make those investments and take people on—that there is a future for them. I do think there is going to be a transition, and I do think there is going to be some time where communities go through some changes, but there have to be huge chances for employment.¹⁰

I think the Clean Energy Council estimated that around 50,000 jobs were required just for the 20% renewable energy target.¹¹

The model actually has rapid growth in green jobs...¹²

A number of witnesses noted that much of the growth in employment would result from a greening of traditional industries, rather than jobs growth in necessarily new low carbon industries:

In the main we do not see there is a dramatic shift from blue collar skills to "green collar" skills. A tradesperson doing maintenance on a wind turbine

10 Mr Tony Westmore, *Senate Standing Committee on Economics, Proof Committee Hansard*, 23 March 2009, p. 24

11 Dr Ottaviano, Carnegie Corporation, *Senate Standing Committee on Economics, Proof Committee Hansard*, 23 March 2009, p. 33

12 Mr Danny Price, *Proof Fuel and Energy Select Committee Hansard*, 2 April 2009, p. 18

for a wind generation farm would have the same skill sets to do a gear box on a coal crusher.¹³

The number of jobs will grow, both in business-as-usual and in a scenario which takes into consideration all the things that have been described in the green paper that would happen in the emissions trading scheme. Overall, the number of jobs will increase over the next two decades—2.5 to 3.3 million new jobs, and 230,000 to 340,000 of these new jobs are in those sectors which we have identified as high-impact sectors, with regard to resource use, energy use and emissions.¹⁴

The committee heard that in the United Kingdom, business is much more positive about the prospect of employment growth:

It is of no surprise that the CBI [Confederation of British Industry] should be an advocate for economic instruments to reduce greenhouse gas emissions across the UK economy, and it is of no surprise to see them argue for greater clarity and a longer term framework for public policy to reduce emissions, because the CBI wants to see UK business position itself to be a winner from the technological and business innovation associated with coping with climate change.¹⁵

The Chief Scientist for Australia, Professor Penny Sackett, in a speech to participants in the 2009 Science Meets Parliament on 17 March 2009, outlined the contribution science will make to the creation of new jobs and new technologies, leading to new jobs throughout the economy:

Thanks to investment made over the last many, many decades in basic and applied research, nearly every area of science and technology can contribute. Mathematicians will continue to refine the algorithms that solve the complex set of equations that describe the Earth system. Marine scientists will collect more data on the impact of climate change on the oceans, in particular the role of our southern oceans in the great circulatory system of the planet that differentially distributes heat to coastlines around the world.

Biologists and ecologists will monitor the effect on plant and animal life, and propose ways for reducing the negative impacts where possible. Astronomers and space scientists will study the natural greenhouse effect on other planets and monitor changes in the earth with remote sensing. Physicists and electrical engineers will improve solar energy solutions already in massive use in the United States, Europe and elsewhere, and no doubt invent some of their own.

Mechanical engineers, aerodynamicists and material scientists will refine the windmills that already provide 20% of Denmark's power. In some

13 Mr Dave Oliver, *Proof Committee Hansard*, 22 April 2009, p. 7

14 Dr Heinz Schandl, *Senate Standing Committee on Economics, Proof Committee Hansard*, 25 March 2009, p.33

15 Mr James Cameron, *Proof Committee Hansard*, 30 April 2009, p. 5

countries, the production of nuclear energy will increase. Microbiologists and geneticists will work to develop crop varieties that are more adaptable to the changing climate.

Architects and building engineers, together with individual citizens and businesses, will work on efficiency measures that will decrease the end use of energy, thereby reducing costs, saving CO₂ emissions, and increasing comfort. Forestry scientists and agriculturalists will improve land management techniques to increase the ability of the land to absorb carbon.

Chemists and industrial scientists will refine techniques for coal and gas-fired electricity generation to reduce emissions. More efficient and portable fuel cells will be developed and put into routine use. Engineers and technologists will work feverishly to test whether carbon geosequestration can be effectively applied at the massive industrial scales required.

More high voltage DC power lines will be installed to transport large amounts of energy over long distances more efficiently. All of these things can happen and need to happen immediately. For the medium term, soil scientists and agronomists will be examining how carbon can be stored in soils, including the possible use of biochar to act as a carbon sink and improve land productivity. Electrical engineers and software scientists will be developing smart power grids that can put power where it is needed when it is needed.

Second- and third-generation biofuels will be investigated as an alternate fuel source by biochemical engineers. And in the longer term still, geologists and geoenvironmental engineers will study deep geothermal "hot rock" energy while theoretical and experimental physicists continue to work on nuclear fusion as alternate source of energy. Can this all be done? In fact, much of it is already being done around the world in regions that have realised the social and economic advantages of leading the transition to the new low-carbon world.¹⁶

We note that a number of reports and forecasts, produced both in Australia and overseas, that present a very positive future for job creation under the Government's climate policy settings, provided that the necessary supporting measures are implemented.

In a June 2008 report to the Dusseldorp Skills Forum¹⁷, the CSIRO examined the skills, innovation and workforce dimensions of the transition to a low carbon economy with a particular focus on labour market effects involved in achieving meaningful cuts in greenhouse emissions. Key results of the research include:

16 *Science and Parliament: Engaging in Changing Climate*; Comments from the Chief Scientist to participants in the 2009 Science Meets Parliament, Speech at the Great Hall, 17 March 2009.

17 Hatfield-Dodds, S. G. Turner, H. Schandl and T. Doss; *Growing the Green Collar Economy: Skills and labour challenges in reducing our greenhouse emissions and national environmental footprint*. Report to the Dusseldorp Skills Forum, CSIRO Sustainable Ecosystems, Canberra, June 2008

- Well designed policies can substantially decouple economic growth from environmental pressure, so that living standards continue to increase at current rates (avoiding blockages that might otherwise occur), while Australia's national greenhouse emissions are reduced over time.
- Achieving a transition to sustainable greenhouse emissions levels would have little or no impact on national employment, with projected increases in employment of 2.5 to 3.3 million jobs over the next two decades.
- Employment in sectors with high levels of emissions will also grow strongly, with projected increases of more than 10% over ten years. This will add 230,00 to 340,000 new jobs - in addition to normal labour turnover – in the transport, construction, agriculture, manufacturing and mining sectors. Employment in construction and transport services is expected to grow faster than the national average.

The report also concludes that the transition to a low-carbon economy will require a large-scale mobilisation of skills and training, and that attention must be paid to both incentives for environmental performance and the skills required to deliver this performance.

We reject the gloomy and at times deliberately misleading prognoses for employment bandied about by those who are opposed to taking action on climate change or who seek to protect the competitive advantage having no carbon price confers on existing technologies over new, emerging technologies in which a carbon price is effectively embedded.

The economic implications of not passing the CPRS

Delaying action on climate change is economically irresponsible. Delay will have a range of negative effects on the Australian economy, including deterring investment decisions and delaying business planning decisions, where the price of carbon is a feature of those decisions.

In 2007, the Shergold Report expressed the fear that "waiting until a truly global response emerges before imposing an emissions cap will place costs on Australia by increasing business uncertainty and delaying or losing investment." Evidence before the Committee indicates this fear was fully warranted.

Business is fully cognisant of these difficulties, understands that they affect a wide range of both low-carbon and emission intensive industries, and expects the Australian Parliament to take action to resolve them this year:

The issue that we face is that there is a strong political will and popular will to have Australia act on climate change. In view of that we assess that business needs to know for investment certainty reasons and business planning reasons—it needs to get a better picture of what that policy direction will be in order to make investments. This applies in for example the renewable area; it applies in the electricity generation area; it applies in

a whole lot of area... Our position is that we ought to have legislation this year.¹⁸

Emission intensive industries need the benefit of a framework within which they can acknowledge their carbon liabilities. In particular, the business community is concerned that a failure to act could have adverse implications for the security of Australia's electricity supply:

We think that in order to secure ongoing electricity supply in Australia we need to make investments very soon. That has been quite apparent for some time.¹⁹

Those with an interest in the development of low carbon industries are also concerned that business opportunities will be missed if the Australian Parliament fails to provide a framework to guide investment decisions in those industries:

In many ways, if Australia does not get on board this train soon, we will be left behind. Our tragic history is one of coming up with the good ideas, but allowing that to go overseas for jobs and profit. We have seen that in solar technology and other technologies.²⁰

The dangers of uncertainty for business were clearly identified by the submission of the Australian Bankers Association (ABA) to the committee:

Climate change has considerable economic, social, environmental and business risks. Continuing uncertainty is disrupting the efficiency of existing markets as well as creating difficulties with regards to financing terms and investment decisions. Australia needs leadership and early action to provide business, investment, operational and market certainty. It is important for Australia to take action now and minimise the impacts of uncertainty.

The ABA also clearly identified business opportunities that will be lost if action is not taken now:

Climate change also presents considerable opportunities. Trading, product creation and ancillary services (including risk consulting, funds management, legal and accounting) should be developed as export services regionally and globally. ... It is important for Australia to take action now and take advantage of the opportunity to position itself as a 'carbon hub' within the Asia-Pacific region.²¹

18 Peter Burn, *Senate Standing Committee on Economics, Proof Committee Hansard* 29 May 2009, 15

19 Peter Burn, *Senate Standing Committee on Economics, Proof Committee Hansard* 29 May 2009, 17

20 John Connor, *Senate Standing Committee on Economics, Proof Committee Hansard*, 29 May 2009, 53

21 Australian Bankers Association, submission 411 to the Senate Select Committee on Climate Change, page 4

Australian businesses know that climate regulation is inevitable. But ongoing uncertainty about what form that regulation will take is imposing real costs today. Uncertainty is the enemy of investment, and therefore of job creation. Electricity generation investments are not being made because the future price of carbon cannot be factored in. Low pollution jobs are not being created today because businesses can't be certain about the climate policy framework. We are holding back the inevitable transformation of the economy – and that means it will be more costly later.

Ongoing uncertainty about how carbon will be priced will have a deadening effect on our industrial innovation and competitiveness. Australia will lack a coherent framework to guide the economy through the transition to a low carbon economy. Rewards could be distorted – industries of the future will struggle to get off the ground while those that must adapt will put off essential changes.

Australia will take on binding commitments at Copenhagen and will need a policy that is tailored to our economy to fulfil those commitments. The alternatives to introducing emissions trading are a distant second-best and much more costly. Once again, business is fully cognisant of this:

Our position is that, if we do not see a carbon price signal emerge fairly quickly, we will be inundated with other forms of regulation that will cost the economy more than if we had a market based approach.²²

Without the CPRS in place, Australia would need to adopt other measures to meet the targets that Australia will agree to at Copenhagen. Business-unfriendly measures like complex additional project approval processes or regulating emissions levels industry-by-industry will raise the cost of reducing Australia's emissions – and those costs will be borne by all Australians through higher prices and a lower standard of living.

The solution is to give Australian industry every opportunity to adapt swiftly and seamlessly to the reality of a carbon-constrained future. Passage of the CPRS legislation will encourage industry to continue to improve its performance in relation to emissions and to take advantage of emerging opportunities in a carbon-constrained environment, while supporting emissions-intensive trade-exposed (EITE) industries to enable them to maintain their competitiveness through the transition.

22 Peter Burn, *Senate Select Committee on Climate Policy, Proof Committee Hansard* 20 May 2009, 74

Recommendations

Recommendation 1

1.1 That the Senate pass the CPRS bills without delay and without amendment.

Recommendation 2

1.2 That the Government fast-track detailed design and roll-out of the Government's proposed Climate Change Action Fund once the CPRS legislation has been passed by the Parliament, in order to help Australian businesses play their full part in creating the low-pollution jobs of the future.

Recommendation 3

1.3 That the Government continue to work with the NSW and ACT Governments to clarify, as a priority, transitional arrangements for power generation projects from waste methane which may be affected by the possible cessation of the NSW GGAS and similar programmes.

Senator Doug Cameron
ALP, New South Wales

Senator Mark Furner
ALP, Queensland

Senator David Feeney
ALP, Victoria

Senator Louise Pratt
ALP, Western Australia

Appendix: Domestic Climate Change Policies of Major Economies²³

Note on interpreting greenhouse gas emissions data

Analysis of global emission trends is hampered by the lack of comprehensive high-quality data. Reliable annual national figures are available for carbon dioxide (CO₂) emissions from fossil fuel use. Data for other sources of CO₂ (particularly deforestation) and for other greenhouse gases (such as methane and nitrous oxide) are much more limited. 2000 is the most recent year for which a complete set of emissions data is available, so it serves as the baseline for comparing national emissions in this document.

Brazil

In 2000 Brazil's total greenhouse gas emissions totalled 2,313.8 Mt CO₂-equivalent (CO₂-e), comprising 5.7% of global emissions, making it the 5th largest emitter. Fifty-nine% of Brazil's greenhouse gas emissions in 2000 were from deforestation. Brazil's CO₂ emissions (not including land use, land use change and forestry) grew by around 70% between 1990 and 2005.²⁴

Brazil ranks relatively low in energy-related carbon emissions as it derives the majority of its energy from hydropower and biomass.²⁵ Brazil's high usage of biofuels stems from its concerns about energy security after the first oil crisis.

Brazil's domestic mitigation policies include a tax incentive for buyers of cars with low-powered engines, production and use of ethanol and sugar-cane bagasse (the fibrous residue remaining after sugarcane stalks are crushed to extract their juice), development of a natural gas industrial market, and use of alternative energy sources for power generation. Mandatory efficiency standards for household appliances, lighting products and motors; appliance and lighting standards were enacted in 2001.²⁶

On 1 December 2008, Brazil announced targets to reduce annual deforestation rates with an ultimate goal of limiting the annual deforestation rate to around 5,500 square kilometres by the end of 2017.

On 13 April 2009, the Brazilian Environment Ministry announced measures that will make operational licenses for new fossil fuel power stations contingent upon

²³ Background document prepared by the Department of Climate Change, updated 2 June 2009

²⁴ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 and 27 May 2009

²⁵ Pew Centre, Climate Change Mitigation in Developing Countries, 2003. Available online at: <http://www.pnl.gov/aisu/pubs/CCMitDevCo.pdf>. Accessed on 7 July 2008

²⁶ IEA Climate Change Policies and Measures Database. Available at: http://www.iea.org/textbase/pm/index_clim.html. Accessed on 7 July 2008.

commitments to offset a portion of the stations' emissions by planting trees. This follows wide-spread criticism from environmental groups of Brazil's 10-year energy plan, published in January 2009. The plan aims to increase domestic generation capacity by building 68 fossil fuel power stations, mainly run on coal and oil, to prevent future power shortages. This expansion would reportedly cause a near tripling of Brazil's emissions from the energy sector by 2017.

Canada

In 2000 Canada's greenhouse gas emissions totalled 765.5 Mt CO₂-e, comprising 1.9% of global emissions, making it the 11th largest emitter. Canada's CO₂ emissions (not including land use, land use change and forestry) grew by around 27% between 1990 and 2005.²⁷

Canada is projected to exceed its Kyoto Protocol target of 94% of 1990 emissions levels (2007 emissions were 126% of 1990 levels).²⁸ Canada has publicly stated that it is unlikely to meet its target through domestic measures, but it will not purchase international credits through the Protocol's flexibility mechanisms to do so.²⁹

The Government has set a long-term domestic target of reducing emissions by 20% from 2006 levels by 2020, and by 60 to 70% of 2006 levels by 2050.

In October 2006, Canada announced its intention to introduce a domestic emissions trading scheme by January 2010, based on reducing the emission-intensity of major industrial sectors including electricity, oil and gas, iron and steel, cement, and chemicals and fertilizer.³⁰ Development of the proposed scheme has now been halted, and Canada is now working with the United States to develop a co-ordinated approach. At the G8 Environment Ministers Meeting in Siracusa, Italy, in April 2009, Canada's Environment Minister Jim Prentice announced that Canada will have a suite of emissions reduction policies in place in time for the Copenhagen round of negotiations.³¹

Several Canadian provinces have also joined North American regional emissions trading schemes (see United States section) and one province, Alberta, has its own

²⁷ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 and 27 May 2009

²⁸ Canada' 2007 Greenhouse Gas Inventory, http://www.ec.gc.ca/pdb/ghg/inventory_report/2007/som-sum_eng.cfm. Accessed on 2 June 2009

²⁹ Former Canadian Environment Minister, under the current Harper Government noted Canada "would not send tax payers money overseas to buy credits." Source: Rona Ambrose speech to Canadian Parliament 11 May 2006

³⁰ Environment Canada web site "Turning the Corner: Regulatory Framework for Greenhouse Gas Emissions" (March 2008). Available at: http://www.ec.gc.ca/doc/virage-corner/2008-03/541_eng.htm. Accessed on 7 July 2008

³¹ Calgary Herald (May 7, 2009) "Prentice promises details of emissions policy." Available online at: <http://www.calgaryherald.com/Business/Prentice+promises+details+emissions+policy/1529011/story.html>. Accessed 12 May 2009

scheme. Starting in July 2007, Albertan facilities that emit more than 100,000 tonnes of greenhouse gases a year are required to reduce their emissions intensity by 12% under the Climate Change and Emissions Management Amendment Act. Companies have three ways to meet their reductions: they can make operating improvements; buy Alberta-based credits; or contribute to the Climate Change and Emissions Management Fund.³²

China

In 2000 China was the 3rd largest greenhouse gas emitter in the world behind the United States and the EU (27), accounting for 4,771 Mt CO₂-e or 12% of global emissions. Since then, China has overtaken the US as the world's largest emitter: the European Environment Agency estimated China's emissions were 14% higher than those of the United States in 2007.³³

China's National Climate Change Program released in 2007 outlines steps China would take to address climate change. Strategies include increasing research and development; improving energy efficiency and building construction; developing renewable and nuclear energy; increasing forest cover, improving industrial policy and agriculture; and, improving institutions and policies. The current 11th Five-year Plan focuses on reducing energy intensity (energy per unit of GDP), with a target of 20% reduction within 5 years. China's renewable energy law which came into effect on 1 January 2006 aims to increase the share of renewable energy in the energy mix from one% (currently) to 15% by 2020. These measures are not equivalent to a Kyoto Protocol-style target .

Of China's 4 trillion yuan November 2008 economic stimulus package responding to the global financial crisis, approximately 1.5 trillion yuan targets green themes, including rail, water infrastructure, low emissions vehicles, and environmental improvement. However, the bulk of the package is devoted to infrastructure projects which will boost cement, steel and glass production, all major sources of China's emissions.

European Union

In 2000, the EU contributed approximately 12% to global emissions, or 4,894.7 Mt CO₂-e, with Germany, the UK and France the largest emitting member states.³⁴ Under the Kyoto Protocol, the EU (comprising its then 15 member states) signed up to an eight% reduction target (i.e. 92% of 1990 level emissions) and with the use of flexibility mechanisms is likely to meet this target.

³² Alberta Government, "Climate Change and Emissions Management Act (2007)." Available online at: http://www.qp.gov.ab.ca/documents/Acts/C16P7.cfm?frm_isbn=9780779723386. Accessed on 7 July 2008.

³³ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 May 2009.

³⁴ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 May 2009

The EU considers that global warming must be limited to no more than 2°C from pre-industrial levels, and supports a global goal of 50% reductions from 1990 emissions by 2050, with developed countries contributing by reducing their emissions 60 to 80%.

The EU is committed to cutting EU emissions by 20% on 1990 levels by 2020 or 30% if comparable efforts are made by other developed countries. The Climate Action and Renewable Energy Package, agreed in December 2008, sets out the contribution expected from each Member State to meeting the EU target and proposes a series of measures to help achieve them: revising the European Union Greenhouse Gas Emission Trading Scheme (EU ETS), establishing emission reduction targets for non-ETS sectors (agriculture, building and transport), adopting an EU-wide renewable energy target (20% of energy to come from renewable energy sources by 2020), and increased demonstration of CCS projects.

On January 28 2009, the European Commission proposed 3.5 billion Euros for investment in CCS with 1.25 billion Euros assigned to the direct funding of eleven projects across the Union. The direct funding will focus on the coal fired power plants located in Germany, Poland, The Netherlands, Spain and the United Kingdom.

The EU Emissions Trading Scheme (EU ETS)

The EU ETS is a mandatory cap and trade emissions trading scheme covering 27 nations in the EU and around half of all EU emissions (approximately 10,000 installations in the energy and industrial sectors). The scheme commenced in 2005 and is now in second phase (2008-2012).

Revisions to the design of the scheme were agreed as part of the climate and energy package and will take effect in Phase III (2013-2020), including: expanded coverage to additional industrial sectors and aviation; phase out of free allocations to electricity generators; a higher level of permit auctioning; and increased limits on the use of Kyoto Protocol flexibility mechanisms.

France

In 2000 France's greenhouse gas emissions totalled 535.4 Mt CO₂-e, comprising 1.3% of global emissions, making it the 14th largest emitter. France's CO₂ emissions (not including land use, land use change and forestry) grew by around 8% between 1990 and 2005.³⁵

France has one of the lowest CO₂ rates of any OECD nation, with up to seventy-eight% of its electricity coming from nuclear power.³⁶ France's target under the EU

³⁵ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 and 27 May 2009

³⁶ European Commission web site, "Renewable Energy Fact Sheet" (January 2008), EC Directorate-General for Energy and Transport. Available at: http://ec.europa.eu/energy/energy_policy/doc/factsheets/renewables/renewables_fr_en.pdf. Accessed on 7 July 2008.

'bubble agreement' is to limit emissions to 1990 levels over the 2008-2012 period. Based on latest projections, France's domestic emissions will be one percentage point over 1990 levels, so France is likely to purchase international credits to meet its target.

France has not announced a specific 2020 target as its contribution to the EU's collective 2020 target.

In addition to participating in the EU ETS, France's climate change policies include a target for an average reduction in energy intensity of its economy by 2% per year between 2005 and 2015 and 2.5% thereafter up to 2030. France has also set a long term target to reduce emissions by 75% on 1990 levels by 2050.³⁷

In addition, France has a target to source 10% of its energy from renewable sources by 2010. This renewable energy policy is supported by a feed-in tariff mechanism for photovoltaic, hydro, biomass, sewage and landfill gas, municipal solid waste, geothermal and offshore and onshore wind, and by a tender system for large renewable projects.³⁸

Germany

In 2000 Germany's emissions totalled 1006.4 Mt CO₂-e and accounted for 2.5% of global emissions, making it the 9th largest emitter.³⁹ Between 1990 and 2005 Germany's CO₂ emissions (not including LULUCF) decreased by 14.5%.⁴⁰ This drop in emissions is almost solely due to the collapse of East German industry after 1996.⁴¹

Under the EU's 'bubble arrangement' to meet its collective Kyoto Protocol target, Germany's target is to reduce its greenhouse gas emissions to 79% of 1990 levels by 2012. It is projected to achieve a further 2% below this target.

Germany has domestic targets to reduce its emissions (in addition to its role in the EU ETS) from 1990 levels by 40% by 2020 and 80% by 2050.⁴²

On 13 February 2009, Germany's Ministry for the Environment, Nature Conservation and Nuclear Safety released 'New thinking – new energy', outlining the initiatives it needs to take to cut emissions by 40% below 1990 levels by 2020. These initiatives

³⁷ French Law: Planning Act N° 2005-781 (13 July 2005).

³⁸ European Commission web site, "Renewable Energy Fact Sheet" (January 2008), EC Directorate-General for Energy and Transport. Available at: http://ec.europa.eu/energy/energy_policy/doc/factsheets/renewables/renewables_fr_en.pdf. Accessed on 7 July 2008.

³⁹ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April and 27 May 2009

⁴⁰ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 and 27 May 2009

⁴¹ German Watch. Available at: www.volker-quaschning.de. Accessed on 7 July 2008

⁴² German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (2008) Available at: http://www.bmu.de/english/climate/general_information/doc/4311.php. Accessed on 7 July 2008

focus on energy efficiency and increased renewable energy uptake. The document also outlines the conditions under which Germany expects it could meet its emissions targets beyond 2020, including: a global emissions trading scheme linked to the EU ETS; half of all coal-fired power plants fitted with CCS; a 30% cut in transport emissions against a 2005 baseline; a 21% cut in power consumption against a 2005 baseline; and a 50% share of renewable power in electricity production.

On 1 April 2009, the German Federal Cabinet adopted a draft act on CCS. The act is designed to grant operators of CCS plants the "necessary planning and investment security for pilot and demonstration plants."⁴³

Germany was the key proponent of the International Renewable Energy Agency (IRENA), officially established in Bonn on 26 January 2009. To date, 78 countries have signed the IRENA Statute, including 28 African, 27 European, 16 Asian and 7 Latin-American countries. The Prime Minister announced Australia's intention to join IRENA on 17 May 2009.

India

In 2000 India's greenhouse gas emissions totalled 1,551.9 Mt CO₂-e, comprising 3.8% of global emissions, making it the seventh largest emitter. India's CO₂ emissions almost doubled between 1990 and 2005.⁴⁴

As the second largest beneficiary of CDM projects, India considers hosting such projects to be the key role for developing countries in global mitigation efforts. However India has also implemented a range of policies focused on energy efficiency and increasing renewable energy including removing subsidies and promoting technology upgrades and fuel-efficiency.

India has set a renewable energy goal of 10% of new power generation capacity by 2010 and commenced a national hydropower initiative aimed at producing an additional 50,000 MW of hydropower by 2012. India has also introduced an afforestation policy which aims to increase forest and tree cover across the country from the existing 23% to 33% by 2012.⁴⁵

India is a key member of the G77 and the 'G5' major developing countries (with China, Brazil, South Africa and Mexico) and is adamantly opposed to developing countries taking on binding international climate change mitigation obligations. India is prepared to make a commitment that its per capita emissions (currently under one

⁴³ German Ministry for the Environment, Nature Conservation and Nuclear Safety, "Federal Cabinet Adopts CCS Act". Available online at: http://www.bmu.de/english/current_press_releases/pm/43681.php. Accessed on 15 May 2009

⁴⁴ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 and 27 May 2008.

⁴⁵ Institute of Global Environment and Society. "Asian Perspectives on Climate Regime Beyond 2012, Institute of Global Environment and Society" (2007). Available at: <http://www.iges.or.jp/en/cp/report13.html>. Accessed on 7 July 2008.

tonne CO₂) would never rise above those of the developed world (approximately 11 tonnes CO₂).

Indonesia

In 2000 Indonesia's emissions totalled 3066.3 Mt CO₂-e and accounted for 7.5% of global emissions, making it the 4th largest emitter.⁴⁶ Deforestation is the largest source of emissions in Indonesia: excluding land use, land use change and forestry reduces Indonesia's total emissions to around 502 Mt CO₂-e, representing 1.4% of global emissions. In 2000, Indonesia was the world's largest emitter from the land use change and forestry sectors (2,563 Mt CO₂, 34% of global emissions from land use change and forestry). Indonesia's CO₂ emissions (not including land use, land use change and forestry) grew by 133% between 1990 and 2005.⁴⁷

On 29 May 2008 Indonesia announced a target to reduce energy sector emissions 17% below 2006. However the target is dependent on separate moves to shift the energy mix away from oil and on access to clean technologies.

Indonesia is a leader amongst developing countries on international efforts on reducing emissions from deforestation and forest degradation (REDD). Indonesia is working towards the development of a national regulation framework for activities on REDD, which will underpin how REDD activities in Indonesia are undertaken and financed. A growing number of REDD activities are already being funded in Indonesia by a range of donor organisations including countries, non government organisations and the private sector.

In June 2008 Prime Minister Rudd signed the Indonesia – Australia Forest Carbon Partnership, with President Yudhoyono, formalising Australia's cooperation with Indonesia on REDD. The Partnership includes development of the world's first large-scale REDD demonstration activity, the Kalimantan Forests and Climate Partnership.

At the Poznan Climate Change Conference in December 2008, Australia and Indonesia made a joint submission on REDD which was well received as a leading example of developing-developed country cooperation in UNFCCC negotiations.

Italy

In 2000, Italy's emissions totalled 531 Mt CO₂-e and accounted for 1.3% of global emissions, making it the 15th largest emitter.⁴⁸ Italy's CO₂ emissions (not including land use, land use change and forestry) grew by around 14% between 1990 and 2005.⁴⁹

⁴⁶ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April and 27 May 2009

⁴⁷ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April and 27 May 2009

⁴⁸ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. . Accessed on 7 April and 27 May 2009.

⁴⁹ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. . Accessed on 27 May 2009

Italy's target under the EU 'bubble agreement' is to reduce emissions by 6.5% on 1990 levels over the 2008-2012 period. Based on latest projections, Italy's domestic emissions will exceed its target by 14 percentage points, so Italy is likely to purchase international credits to meet its target.

Italy has not announced a specific 2020 target as its contribution to the EU's collective 2020 target. Within internal EU negotiations on its climate change and energy package Italy advocated strongly for a number of provisions to be weakened as a result of the global financial crisis.

As current G8 President, Italy chaired the G8 Environment Ministers Meeting in Sicily in April 2009, at which Australia was represented by the Minister for Agriculture, Fisheries and Forestry, Tony Burke. Italy will also host a Major Economies Forum meeting at leaders level in conjunction with the G8 Summit in L'Aquila, Italy, from 8-10 July.

Japan

In 2000, Japan was the world's 8th largest emitter of greenhouse gases, with emissions of 1,317 Mt CO₂-e, approximately 3.2% of global emissions.⁵⁰

Japan's emissions are currently 7.7 percent above 1990 levels. To meet its Kyoto target of a 6% reduction, Japan will need to reduce emissions by 14 percentage points over the next four years. Japan has introduced additional measures (see below) to reduce emissions to 0.8 1.8% below 1990 levels. The remaining 4.2 5.2 percentage points would be made up through carbon sinks and international credits.⁵¹

Examples of additional measures are the promotion of voluntary emissions reduction measures, improvement of energy-efficiency in homes, complete energy efficiency in factories and offices, improvement of fuel-efficiency in cars, promotion of emissions reduction measures in small-to-medium sized enterprises, and promotion of measures for alternative energy.

On 9 June 2008 former Prime Minister Fukuda announced a domestic emissions reduction target of between 60 and 80% on current levels by 2050. Current Prime Minister Taro Aso affirmed Japan's commitment to be a leader on climate change at a forum convened by the United Nations Secretary General in September 2008.⁵² Japan is expected to announce mid-term emission reduction targets in mid 2009.

⁵⁰ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 July 2008

⁵¹ Point Carbon web site: "Japan cabinet formalises strengthened Kyoto programme". Available at: <http://int.pointcarbon.com/Home/News/All%20news/Kyoto%20International/article27449-471.html>. Accessed on 7 July 2008

⁵² Japan Ministry of Foreign Affairs website, www.mofa.go.jp/POLICY/un/assembly2008/PM0925-2.html. Accessed on 27 March 2009

The Japanese Government continues to face domestic criticism that its climate change policies only cater to companies worried about additional costs.⁵³ With elections to take place in September 2009, pressure is mounting on the current Government to announce stronger targets after the main opposition party, the Democratic Party of Japan (DPJ) recently tabled a bill calling for cuts of 25% from 1990 levels by 2020 .

Former Prime Minister Fukuda announced in June 2008 the experimental introduction of an ETS with the inclusion of 'as many sectors and companies as possible'.

Japan has trialled emissions trading through a number of schemes, including J-VETS (introduced in 2005) and more recently a voluntary emissions trading scheme which began in October 2008 covering around 500 businesses. A number of regional schemes are also proposed, including by the Saitama Prefecture.

Republic of Korea

In 2000 the Republic of Korea's (ROK) greenhouse gas emissions totalled 511.2 Mt CO₂-e, comprising 1.25% of global emissions, making it the 17th largest emitter. ROK's CO₂ emissions have almost doubled between 1990 and 2005.⁵⁴ While ROK is not included in the UNFCCC's Annex I (developed country) grouping, as an OECD member, it is expected to take on more ambitious climate policies than most developing countries.

The ROK is showing an increased willingness to play a more prominent role in international climate change action, mostly as a result of the enthusiasm of President Lee Myung-bak. In September 2008, the ROK Government tabled a framework legislation package on climate change that includes provisions for an emissions trading scheme, greenhouse gas measurement and reporting, and foundations for boosting clean technology and renewable energy.⁵⁵ At that time, President Lee announced plans to invest approximately AUD94 billion over the next five years towards initiatives including clean coal, solar, fuel cell development and nuclear power. In January 2009, ROK announced a plan to increase the share of renewable energy to a projected 11% share of the energy mix by 2030. The ROK projects that energy-related emissions will peak in 2016.

In February 2009, President Lee established a Green Growth Commission to implement his national vision for "low carbon, green growth" and to advise on the potential introduction of a cap and trade scheme in 2013.

⁵³ Reuters, 24 March 2009, "Japan election may bring tougher climate policies". Available online at: <http://www.reuters.com/article/GCA-BusinessofGreen/idUSTRE52N24T20090324> . Accessed on 27 March 2009

⁵⁴ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April and 27 May 2009

⁵⁵ Point Carbon (2 September 2008), "Korea Issues Emissions Trading Bill" <http://www.pointcarbon.com/news/1.965517>. Accessed on 2 September 2008

Korea signed up as a founding member of the Global Carbon Capture and Storage Institute (GCCSI) earlier this year.

Mexico

In 2000 Mexico's greenhouse gas emissions totalled 670.8 Mt CO₂-e, comprising 1.6% of global emissions, making it the 12th largest emitter. Mexico's CO₂ emissions grew by around 35% between 1990 and 2005.⁵⁶ While Mexico is not included in the UNFCCC's Annex I (developed country) grouping, as an OECD member it is expected to take on more ambitious climate policies than most developing countries.

Mexico has recently taken a number of notable steps forward on climate change. Mexico has committed to implementing specific activities under its National Climate Change Strategy and Special Climate Change Program, including an Inter-American Development Bank financed national study on the economic impact of climate change (based on the Stern Review methodology), measures to mitigate that impact, and climate change action plans in more than 10 states in Mexico.

In December 2008, Mexico announced it aims to cut emissions by 50% on 2002 levels by 2050, making it one of the first developing countries to commit to a long-term target. Mexico's 2009 'Special Program on Climate Change' also includes a goal of reducing its emissions by 99 Mt CO₂-e by 2012.

Recent media reports indicate that Mexico is also considering implementing a domestic cap-and-trade system.

Russia

In 2000 Russia's greenhouse gas emissions totalled 1959.7 Mt CO₂-e: 4.8% of global emissions, making it the 6th largest emitter. Russia's CO₂ emissions (not including land use, land use change and forestry) decreased by around 30% between 1990 and 2005.⁵⁷ Russia's emissions fell dramatically with the economic collapse of the early 1990s, however emissions have been on an upward trend since 2000. Russia has a strong interest in the Kyoto Protocol's 'Joint Implementation' mechanism, under which it can sell its excess Kyoto credits to other developed countries which will fall short of their Kyoto targets.

Russia's domestic climate change policy is largely centred on the energy efficiency elements of its National Energy Strategy which was approved in August 2003. The Energy Strategy document outlines several main priorities: an increase in energy efficiency and in renewable energy, reduced impact on the environment, technological development, as well as an improved effectiveness and competitiveness.⁵⁸

⁵⁶ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 27 May 2009

⁵⁷ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April and 27 May 2009

⁵⁸ IEA Climate Change Policies and Measures Database. Available online at: http://www.iea.org/textbase/pm/index_clim.html. Accessed on 7 July 2008

In June 2008, Russian President Dmitry Medvedev announced the Government had approved funding for energy efficiency projects and renewable energy and raised the possibility of regulations from 2010 aiming at reducing consumption of natural gas in household heating. Medvedev indicated efforts to boost energy efficiency could cut energy intensity in households and industry by 40-50% but without specifying a time period.⁵⁹ Russia is also reportedly considering tax incentives for the development of low-emission fossil fuel technology, and the removal of barriers to the development of renewable energy.⁶⁰

Although Russia has not announced a 2020 target, it is likely to argue strongly for conditions in a post-2012 outcome that would ensure it continues to benefit from the emissions reductions that resulted following its economic collapse in the 1990s – for example, continuation of 1990 or a similarly advantageous (ie – early) base year, and 'banking' of credits for use in future commitment periods.

South Africa

In 2000 South Africa's greenhouse gas emissions were 385.3 Mt CO₂-e, accounting for 0.94% of global emissions and making South Africa the world's 23rd largest emitter.⁶¹

As a developing country, South Africa has emphasised that sustainable development (including the creation of employment, alleviation of poverty and provision of housing) sets the context for its climate change policy response. It argues that mitigation efforts of developing countries will depend on international funding and technology support.⁶²

In June 2008 South Africa released Long-Term Mitigation Scenarios (LTMS) identifying scenarios for mitigation of climate change in South Africa. This document recognises that South Africa is a high per-capita emitter with relatively high emissions intensity figures. On a "business as usual scenario", South Africa's emissions grow from 440 Mt CO₂-e in 2003 to around 1600 Mt CO₂-e by 2050.

The LTMS is considered as laying the foundation for the development of a comprehensive national climate change policy. The policy is expected to be finalised

⁵⁹ Point Carbon (5 June 2008), "Russia should play full role in post-2012 talks: senior MP." Available online at: <http://www.pointcarbon.com/news/1.932057> (subscription required). Accessed on 7 July 2008

⁶⁰ Point Carbon (5 June 2008), "Russia should play full role in post-2012 talks: senior MP." Available online at: <http://www.pointcarbon.com/news/1.932057> (subscription required). Accessed on 7 July 2008

⁶¹ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April 2009

⁶² South African Department of Environmental Affairs and Tourism (DEAT) "A National Climate Change Response Strategy for South Africa", September 2004. Available at: www.environment.gov.za/Documents/Documents/2004Oct7/Climate%20change%20response%20strategy%2010Sept04.doc. Last accessed 27 March 2009

in late 2010 and would reflect any post 2012 commitments adopted by South Africa resulting from COP15 in December 2009.

In July 2008 the South African Cabinet announced a "peak, plateau and decline" policy where greenhouse gas emissions stop growing by 2020-2025, stabilise for up to ten years and then decline in absolute terms. To achieve these mitigation objectives, the Government plans to implement a number of measures including:

- accelerated energy efficiency (including mandatory targets) and conservation measures across all sectors of the economy;
- research and development funding focusing on carbon-friendly technologies;
- increasing the price of carbon through an escalating CO₂ tax or an alternative market mechanism;
- diversifying the energy mix away from coal and at the same time shifting to cleaner coal;
- setting targets for electricity generated from both renewable and nuclear energy sources; and
- exploring and developing carbon capture and storage (CCS) for coal fired power stations and coal-to-liquid plants.⁶³

The next step in South Africa's policy development process is the publication of a draft policy document in the form of a green paper in April 2010.

United Kingdom

In 2000 the UK's greenhouse gas emissions were 632.2 Mt CO₂-e. This comprised 1.6% of global emissions, making the UK the world's 13th largest emitter. The UK has reduced its greenhouse gas emissions since 1990, with CO₂ emissions (not including LULUCF) falling by 5% between 1990 and 2005.⁶⁴ This reduction has mainly been driven by restructuring, especially in the energy supply industry (national coal production virtually ceased and was predominantly replaced by energy produced from gas); energy efficiency; pollution control measures in the industrial sector and other policies that reduced emissions of non-CO₂ greenhouse gases.

On latest projections, UK emissions will be 7 percentage points below its Kyoto Protocol "EU bubble" target of 87.5% of 1990 levels.

In October 2008 the UK announced a domestic commitment to reduce emissions by 80% on 1990 levels by 2050. Further to this, on 20 April 2009 the UK released a mid-

⁶³ South African Department of Environmental Affairs and Tourism (DEAT), "2009 Climate Change Summit Statement". Available at: http://www.ccs Summit2009.co.za/Downloads/Media/2009.03.06_Climate_Change_Summit_2009_Statement.pdf Accessed on 9 March 2009

⁶⁴ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 July 2008

term emissions reduction target of 34% below 1990 levels by 2020. The UK has indicated that reductions are to be made at home and has also suggested that it will toughen targets once a global agreement is in place.

The key piece of UK legislation on climate change is the UK Climate Change Act 2008. The Act mandates the emissions reduction targets listed above through a carbon budgeting system, which caps emissions over five year periods all the way until 2050.⁶⁵ The UK intends to publish an energy and climate strategy by September 2009 which will set out policies on how the limits will be met for each of the five-year carbon budget periods.

The Climate Change Act allows the UK to meet its carbon budgets through the purchase of carbon credits corresponding to overseas emissions reductions. The UK aims to meet the first three carbon budgets without purchase of overseas credits outside of the EU ETS, reserving possible credit purchase as a fallback option. In the 2009 Budget,⁶⁶ the UK announced over £1.4bn additional support for low-carbon sectors. Key elements are:

- £375 million to support energy and resource efficiency in businesses, public buildings and households over the next two years, and £70 million for decentralised small-scale and community low-carbon energy
- £405 million to support low-carbon industries and advanced green manufacturing
- £525 million support to offshore wind through reform of the Renewables Obligation. This is expected to support £9 billion of investment and power up to 2.8 million homes
- extending support for combined heat and power through climate change levy exemptions, helping bring forward £2.5 billion of investment, and 3 GW of capacity by 2015
- a new funding mechanism to support up to four carbon capture and storage demonstration projects, and £90 million to fund detailed preparatory studies.

On 23 April 2009, the UK announced that future coal-fired power stations would only be built if fitted with CCS demonstration technology. Within five years of CCS technology being independently judged as technically and commercially feasible, all coal-fired power stations are to be retrofitted with the technology.⁶⁷

⁶⁵ DECC web site:

http://www.decc.gov.uk/en/content/cms/legislation/en/content/cms/legislation/cc_act_08/cc_act_08.aspx. Accessed on 15 May 2009

⁶⁶ HM Treasury website: http://www.hm-treasury.gov.uk/d/Budget2009/bud09_complereport_2520.pdf. Last accessed on 18 May 2009

⁶⁷ DECC web site: <http://www.decc.gov.uk/en/content/cms/news/pn050/pn050.aspx>. Accessed on 15 May 2009

The UK has a range of climate change initiatives implemented over the last decade to contribute to achieving their emissions reduction targets. Key measures include the climate change levy, emissions trading (as part of the EU), and a carbon reduction commitment.

The Climate Change Levy is a tax on the use of non-renewable energy in industry, commerce and the public sector. Climate Change Agreements have been made with energy intensive industries (such as aluminium and paper manufacturing) allowing them an 80% discount from the levy in exchange for adopting targets for improving their energy efficiency or reducing carbon emissions.⁶⁸

The UK Emissions Trading Scheme, which commenced in 2002, was the world's first economy wide greenhouse gas emissions trading scheme. This scheme ended in December 2006 and the UK now participates in the EU ETS.⁶⁹

The Carbon Reduction Commitment aims to create incentives for significant carbon abatement in non energy intensive sectors, such as large commercial and public sector organisations, that are not covered by the EU ETS or Climate Change Agreements. An introductory phase is due to start in January 2010.⁷⁰

UK power transmission network operator, National Grid, recently pledged an emissions reductions target of 45% by 2020, with carbon budgets implemented across all National Grid operations from 1 April 2009. National Grid's efforts are designed to help the UK reach its 80% reduction target by 2050 and 15% renewable energy target by 2020.

United States

The US is officially the world's largest emitter of greenhouse gases, though recent reports (see above) indicate that China has now overtaken the US. US greenhouse gas emissions in 2000 were 6,442.8 Mt CO₂-e, comprising approximately 16% of global emissions. Between 1990 and 2005 US CO₂ emissions (not including land use, land use change and forestry) grew by 20%.⁷¹

President Obama has made climate change a priority for his Administration - the President's 'New Energy for America' plan includes the following elements:

- implement an economy wide cap and trade system;

⁶⁸ DEFRA web site: <http://www.defra.gov.uk/environment/climatechange/uk/business/cca/levy.htm> . Accessed on 15 May 2009

⁶⁹ DEFRA web site: <http://www.defra.gov.uk/environment/climatechange/trading/index.htm>. Accessed on 15 May 2009

⁷⁰ DECC web site: http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/crc/crc.aspx. Accessed on 15 May 2009

⁷¹ WRI CAIT. Available online at: <http://cait.wri.org/cait.php>. Accessed on 7 April and 27 May 2008

- fund the development and demonstration of a smart grid (energy transmission) technologies;
- create 5 million new jobs by investing USD150 billion over the next 10 years on clean energy research, development and demonstration, including promoting energy efficiency, home insulation for 1 million homes annually, and clean coal technologies;
- USD3.4 billion for low-carbon emission coal power and industrial processes;
- establish a National Low Carbon Fuel Standard, and a new USD7,000 tax credit for purchasing advanced vehicles; and
- put 1 million plug-in hybrid cars on the road by 2015.

The cap-and-trade system outlined in the plan is to reduce carbon emissions by about 14% below 2005 levels by 2020 and 83% below 2005 levels by 2050 (equivalent to returning emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050).

On 31 March 2009, the draft American Clean Energy and Security Act of 2009 (the Waxman-Markey Bill) was released for discussion by Henry Waxman, Chairman of the House Energy and Commerce Committee and Edward Markey, Chairman of the Subcommittee on Energy and the Environment. On 21 May 2009 the House Energy and Commerce Committee voted 33-25 to approve a revised version of the Waxman-Markey Bill (HR2454, the American Clean Energy and Security Act of 2009).

The Waxman-Markey Bill proposes a suite of measures to promote clean energy, improve energy efficiency, reduce greenhouse gas pollution (including through the introduction of 'cap and trade' emissions trading scheme) and support the transition to a clean energy economy.

The headline target for the draft Bill is US economy-wide emission reductions of 20% on 2005 levels by 2020 (equivalent to a 8% reduction on 1990 levels). In addition, the draft Bill proposes supplemental reductions of 10% of 2005 emissions through reducing deforestation and preventing illegal logging in developing countries. This is funded from revenue from auctioning permits. With these supplemental reductions, the economy-wide goal is equivalent to a 19% cut on 1990 levels.

On 19 May President Obama announced a new national policy aimed at both increasing fuel economy and reducing greenhouse gas pollution for all new cars and trucks sold in the US in 2012-2016 (requiring a 35.5 mpg average in 2016).

State-based ETS

There are three multi-state emissions trading schemes currently under development in the US, which cover approximately 155 million citizens or just over half of the US population. California also has a well-developed ETS plan.

The Western Climate Initiative (WCI) includes seven US states: Arizona, California, Montana, New Mexico, Oregon, Utah, and Washington (approximately 59 million

citizens); and four Canadian provinces (British Columbia, Manitoba, Quebec and Ontario), with a goal of reducing emissions by 15% on 2005 levels by 2020 (approximately 33% below business as usual levels). The WCI's design for a cap and trade program was released on 23 September 2008. The design recommends a base program covering all six greenhouse gasses emitted from the electricity sector, large stationary combustion sources, industrial process and waste management emissions, and fossil fuel production and processing.⁷²

The Regional Greenhouse Gas Initiative (RGGI) includes ten US states: Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, Vermont, Massachusetts, Rhode Island and Maryland (approximately 57 million citizens).⁷³ Under the RGGI, an emission cap is set at current levels in 2009, and then reduced 10% by 2019. The emission trading scheme is initially restricted to CO₂ emitted from power stations. The scheme commenced in January 2009 and three permit auctions have been held (1 September 2008, 17 December 2008 and 18 March 2009). The next auction is scheduled for 17 June 2009. RGGI participants will be allowed to use international offsets once a threshold price has been reached.

The Midwestern Greenhouse Gas Accord includes six US states: Illinois, Iowa, Kansas, Michigan, Minnesota and Wisconsin (approximately 39 million citizens); and the Canadian province of Manitoba. The Accord was agreed in November 2007 and will establish reduction targets and a multi-sector cap and trade system, although no specific targets or design elements have been released.⁷⁴ Work is continuing on finalising targets for reducing emissions, and the design of the scheme.

California is committed to bringing down emissions to 1990 levels by 2020 (at least a 25% reduction below BAU) and to 80% of 1990 levels in 2050. Plans for an ETS were released on 27 June 2008, and the scheme is due to commence in 2012. It will cover all six Kyoto Protocol greenhouse gases and initially include power generators and oil refineries.⁷⁵

⁷² Western Climate Initiative web site, "Design Recommendations on Elements of the Cap and Trade Program" (September 2008). Available at: <http://www.westernclimateinitiative.org/ewebeditpro/items/O104F21253.PDF>. Accessed on 27 March 2009

⁷³ Regional Greenhouse Gas Initiative web site, "Design Elements for Regional Allowance Auctions under the Regional Greenhouse Gas Initiative" (March 2008). Available at: http://www.rggi.org/docs/20080317auction_design.pdf. Accessed on 7 July 2008

⁷⁴ Midwestern Greenhouse Gas Accord web site, "Governors Sign Energy Security and Climate Stewardship Platform" (November 2007). Available at: <http://www.midwesterngovernors.org/govenergynov.htm>. Accessed on 7 July 2008

⁷⁵ California Environmental Protection Agency web site, "Climate Change Draft Scoping Plan" (June 2008). Available at: <http://www.arb.ca.gov/cc/scopingplan/document/draftscopingplan.pdf>. Accessed on 7 July 2008