

## **CROSS SECTORAL WORKING GROUP**

### **REPORT EXTRACT**

#### **EXECUTIVE SUMMARY**

The Cross-Sectoral Working Group (CSWG) represents a broad cross-section of Australian industry. In making recommendations to the Federal Government on industry preferred greenhouse abatement and adaptation policy options, the CSWG believes that a broad package of measures is desirable.

The recommendations provided below are an accurate reflection of what was discussed by this Working Group. They do not however represent the unequivocal views of all participants.

Specifically, the CSWG recommends a package comprising: *[this section is expected to change]*

- Promotion of continued international debate on the formulation of a long-term global response to climate change;
- Greater access to bilateral agreements as a means to engage developing countries and to promote business opportunities;
- An expanded Greenhouse Challenge Program;
- A greenhouse gas acquisition scheme whereby governments tender for greenhouse gas abatement with Greenhouse Challenge membership a pre-requisite for participation;
- A national end-use energy efficiency framework underpinned by a mix of voluntary programs, appropriate regulatory intervention and financial incentives;
- A comprehensive climate change innovation policy which includes international collaboration on relevant research, development and demonstration as well as strategies to promote investment in new and improved technologies and the uptake of these technologies; and
- Enhanced government support for accelerated, focussed climate research to provide more detailed information about the likely impacts of unavoidable climate change.

The key points of the CSWG deliberations are as follows.

#### **International Aspects**

- (i) The Federal Government should promote continued international debate on the formulation of a long-term global response to climate change. It should be emphasised that an effective global response requires commitments to abate emissions from all countries, especially large and growing emitters
- (ii) The Federal Government should establish ongoing processes for involving industry in the development of future international negotiating positions, given the

- potential impact on the whole of Australia's economy, particularly its trade exposed industries
- (iii) A comprehensive assessment of the likely impacts of alternative allocation methods for global emission reduction commitments is critical to determine the appropriate policy position for Australia to adopt in the emerging debate on these issues – it is recommended the Federal Government commission a project(s) to undertake such an analysis that takes into account all sectors of the economy and the long-term as well as the short-term implications
  - (iv) Early determination (by end-2004) of Australia's negotiating strategy is required to ensure effective participation in international negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) relating to the post-2012 period
  - (v) Continued bilateral options need to be developed, complementary to multilateral aspects, where it can be demonstrated that they are in Australia's national interest; the Federal Government should continue to consult with industry on the priority, opportunities and actions for bilateral agreements and to involve industry in the development and the operation of bilateral agreements with developed and developing countries
  - (vi) The Federal Government should develop with industry a strategy for Australia contributing to international efforts to assist developing countries in reducing greenhouse emissions through programs to advance increased efficiency, renewable energy, efficient fossil fuel supply and use (including the retro-fitting of existing plant) and to develop infrastructure and modernise their industries with the lowest possible carbon signature
  - (vii) A clear government policy statement is required on ways for industry to gain access to international greenhouse flexibility mechanisms – and for the Federal Government to review with industry the opportunities to offset or address any impediments that may arise under the Government's policy approach
  - (viii) A number of Working Group members had an alternative view and considered a discussion of international greenhouse issues would be incomplete without considering the issue of ratification, which they consider to be in Australia's best interests.

### **Broad-Based Measures**

- (i) Broad based measures have the potential to deliver greenhouse gas emissions abatement in a cost-effective manner by providing a greenhouse price signal across the economy
- (ii) Australia should adopt a nationally consistent and co-ordinated policy approach in responding to climate change
- (iii) The Working Group supported, in principle, the concept of a comprehensive international emissions trading scheme but was not satisfied the necessary conditions exist to propose the adoption of a national emissions trading scheme at this time
- (iv) The absence of a comprehensive international approach to abating greenhouse emissions constrains the type and design of (national) implementation options to

deliver against policy objectives particularly in terms of the impact on the competitiveness of Australian industry competing with countries not subject to an emissions cap or countries that do and exempt their trade-exposed industries

- (v) Against the current international policy background, each broad based measure has been assessed against key criteria (at Section 2.3), and the Working Group has concluded:
- Emissions trading and taxes fail to meet, or fall short in meeting, the competitiveness, comprehensiveness, certainty and cost-effectiveness criteria in the absence of an effective comprehensive global approach to addressing climate change;
  - Mandatory greenhouse measures which prescribe or reserve specific market targets are considered inefficient and high cost – and are expected to damage the international competitiveness of Australian industry in the absence of an effective global regime;
  - Fiscal incentives are expected to meet the competitiveness criterion. Their performance against the other key criteria will depend on the nature, coverage and design features of the measures themselves. In particular, their cost-effectiveness can be improved by including competitive tendering in their design. Their inherent flexibility means fiscal incentives have a capacity to provide a bridge from Australia's current greenhouse policy position to one where a comprehensive international approach exists;
  - Appropriately structured greenhouse negotiated agreements can provide sufficient flexibility to take account of the different trade competitiveness impacts on sectors and firms. The performance of greenhouse-negotiated agreements against the other key criteria will depend on the nature, coverage and design features of the agreement. Improved cost-effectiveness can be achieved by explicitly structuring the agreement to include elements that incorporate some tendency towards lowering the overall cost of achieving abatement commitments (eg include offset clauses so that firms could purchase or exchange abatement with other participants)
- (vi) Developing a broad-based package of fiscal incentives, complemented by negotiated agreements, may offer the most practical 'building blocks' for meeting national greenhouse policy goals
- (vii) The Working Group therefore proposes:
- A comprehensive national greenhouse gas monitoring and annual reporting of inventories, actions/improvements and rolling two year forecasts using methodologies proven under the Greenhouse Challenge Program for all enterprises (government and non-government) above a specified emissions threshold should be considered. The system would function as a single national greenhouse gas emission reporting system with 'opt in' provisions for enterprises below the emission threshold to enable their participation in the emission abatement incentive scheme as described below; and
  - A comprehensive nation-wide greenhouse gas abatement acquisition

scheme whereby government purchases, via an annual tender/bid process, from within Australia (and other countries, under terms to be specified) abatement to meet an agreed Council of Australian Governments (CoAG) increment towards a national goal for net emissions and/or up to an agreed CoAG progressive expenditure cap should be considered. The scheme would be open to all sectors of the Australian economy, including government operations and eligible abatement must be over and above the abatement required under the Greenhouse Challenge Program. That is, the Greenhouse Challenge Program would become a pre-requisite for participation in the scheme.

(viii) A number of Working Group members consider an alternative approach to broad-based measures is more appropriate. This is outlined below:

- In order to address the Government's objective of significantly reducing Australia's greenhouse signature over the next 30 years, a suite of policy measures is required, the central feature being the inclusion of a broad based emissions cost into the cost of production. This would ensure that future greenhouse gas emitters incorporate the cost of abating greenhouse gas emissions into their investment, purchasing and operating decisions. The proceeds raised from such an approach would then be available to fund abatement activity and to fund other fiscal incentives;
- Emissions trading is seen as the most cost effective approach in the longer term, however it is recognised that there would be difficulty in implementing such a scheme in the short to medium term as not all countries are bound by an emissions cap. It is nevertheless critical to ensure that an emissions cost is included in investment decision making so as not to burden the community with any further sunk investment in emission intensive assets;
- In the transition to emissions trading, national mandated measures should be implemented, specifically a national greenhouse abatement scheme that consolidates and expands current state based schemes. A national scheme can be more cost effective by expanding the abatement activities covered and including other liable parties. Importantly it can be readily implemented as NSW, Queensland and more recently Victoria have committed to introducing mandated market based greenhouse schemes that effectively cover 75% of Australia's electricity consumption. A national approach reduces complexity and compliance costs and importantly can be dovetailed into emissions trading and provides industry with important experience and price discovery; and
- Such an approach can be complimented and supported by other mandated schemes such as the Mandated Renewable Energy Target (MRET) which is an industry development initiative as well as the development of mandated minimum energy performance standards for domestic and non-residential buildings, equipment and appliances.

## **End-Use Energy Efficiency**

- (i) Energy efficiency is a key least cost path to achieving abatement outcomes in the short to medium term and is a useful part of a sound transitional strategy
- (ii) Energy efficiency investments and practices potentially provide opportunities for both economic and greenhouse benefits. Market failures that impede end-use energy efficiency need to be identified and, where cost-effective, addressed
- (iii) Market transformations need to occur to encourage energy efficiency. Industry supports voluntary initiatives and appropriate regulatory intervention (including an expansion of the minimum energy performance standards program and minimum energy efficiency standards for all new and refurbished buildings), coupled with financial incentives (industry supports the adoption of an approach like the U.K Government scheme to energy efficiency to achieve continual improvements in end-use energy efficiency)
- (iv) The drivers for substantial energy efficiency related abatement will predominantly stem from capital investments induced by demonstrated returns, RD&D progress and expenditure, attitudinal/cultural change and fiscal incentives
- (v) The development of a National Energy Efficiency Framework should be considered as a means to better utilise existing resources and to pursue more effectively those energy efficiency related measures agreed to by Ministers in 1998 under the National Greenhouse Strategy
- (vi) More nationally consistent and rigorous evaluative approaches are required to assess the merit of domestic energy efficiency programs. Mandatory and voluntary programs need to be reviewed regularly to ensure optimal outcomes. A nationally consistent definition of desirable project cost effectiveness, such as (\$/ Mt CO<sub>2</sub>-e) is an essential first step in developing a transparent yardstick for government program design and improvement

### **Promoting Innovation: Research Development and Demonstration**

- (i) Research, Development & Demonstration (RD&D) is an essential component of any climate change response strategy. Substantial future greenhouse gas emission abatement (and adaptation responses) will primarily be achieved through making major technological advancements commercially viable and picked up by industry as capital investment in new and improved technology for plant and equipment
- (ii) International collaboration is an essential component of any Australian Climate Change RD&D program, but there is a demonstrated need for innovation policy to promote sound investment in new technology and address commercialisation of this new and improved technology
- (iii) An Australian RD&D package should:
  - Be open to use by all technologies/innovations/sectors;
  - Be linked to international trends;
  - Be based on taxation related incentives and government funding for RD&D and innovation commercialisation which is open to all technology pathways;

- Facilitate public funding of demonstration projects; and
  - Be complemented by taxation/other incentives for investment in new and replacement plant and equipment
- (iv) RD&D government climate change policy should:
- Aim to get maximum impact from existing programs;
  - Provide funding for demonstration projects flowing from research related activities; and
  - Ensure that companies funding greenhouse related research and development are eligible for a 175% immediate deduction for eligible R&D in relation to corporate tax. Companies not able to take advantage of this immediate deduction can carry forward the taxation deduction and apply against future income. Or alternatively, they can take advantage of a complimentary, generic competitive grant scheme (see (v))
- (v) A grants scheme based on a generic lists based approach, overseen by an expert panel, should be adopted to define research and development. These would include adaptation responses, sequestration and disposal, renewable energy technologies, energy efficiency, new transport fuels, cleaner electricity generation and reduction of emissions from industrial and agricultural production
- (vi) Fiscal incentives for investment in new technology would include accelerated depreciation, tax concessions, re-investment tax concessions and other targeted programs
- (vii) The need for generic policies on RD&D arises from the recognition that the substantive reductions in the emissions signature of the Australian economy required are both needed and technically feasible, but will depend on technologies that are still in the RD&D phase
- (vii) A number of Working Group members had an alternative view and considered that the MRET legislation should be expanded

## **Adaptation**

- (i) Adaptation to the impacts of climate change is a necessary strategy to complement climate change mitigation efforts. Impacts of climate change will be both positive and negative but the larger the changes and rate of change in climate, the more the adverse effects predominate
- (ii) The Government's forward climate change strategy indicates that policy will assist adaptation to consequences of climate change (over the longer term) – further, "... Australia will prepare for unavoidable climate change impacts, including on agriculture, tourism, insurance, infrastructure and on natural ecosystems". Research will also be undertaken to improve understanding of likely impacts and as an input to mitigation and adaptation strategies
- (iii) Private and public decision-makers will need considerably improved detail and specificity about potential impacts of climate change:

- As a first step, greater clarity about the potential impacts of climate change (the nature, magnitude, timing and location) will be required;
  - As a second step, various governments (as part of co-ordinated national strategy) will need to apply the climate adaptation data to regional and local plans and economic models to identify key physical, biological and biodiversity changes resulting from the identified climate indicator changes; and
  - As a third step, this regional data needs to be distributed to entities and government agencies so that they can develop appropriate adaptation responses
- (iv) It is essential that government enhance its support for accelerated, focused climate research by CSIRO, the Bureau of Meteorology and other relevant bodies with a view to providing more detailed information about the nature, magnitude, timing, frequency, duration and location of potential unavoidable climate impacts
- (v) In considering Australia's policy response to climate change, governments should:
- Recognise that adaptation strategies will be a necessary part of a cost-effective long term and comprehensive policy response to climate change throughout Australia;
  - Better define the long-term implications of climate change to Australian industry;
  - Develop and implement adaptation strategies based on sound science and risk management;
  - Engage Australian industry early in the development and implementation of adaptation strategies affecting their businesses; and
  - Explore the balance between the relative costs and benefits of adaptation and abatement options in the overall policy mix
- (vi) Some members of the Working Group considered immediate action should be taken to develop adaptation strategies in relation to agriculture, water and insurance policies

## INTRODUCTION

The Cross-Sectoral Working Group (CSWG) is one of five working groups formed following discussions in August 2002 between the Hon David Kemp MP, Minister for the Environment and Heritage, the Hon Ian Macfarlane MP, Minister for Industry, Tourism and Resources, and a number of industry associations and representative groups.

The objective of the dialogue process is to provide industry with an opportunity to input to the task the Government has set to formulate a long-term greenhouse gas abatement and adaptation strategy and identify policy measures conducive to the needs and characteristics of Australian industry. Industry trusts that the dialogue will continue should government consider introducing new policy measures.

The CSWG in September 2002 agreed to adopt its own 'specific' terms of reference (can be found at **Appendix 1**), as well as a 'broad' terms of reference which all of the Government-Business Climate Change Working Groups have ascribed to (**Appendix 2**).

Membership of CSWG consists of twenty-three different bodies – covering a wide range of different industries and sectors. A full list of CSWG participants can be found at **Appendix 3**.

In formulating this paper, the CSWG meet a total of six times. Members were requested to review the material prepared by working group participants and to provide continual comment. The views put forward in this paper are the consensual views of all working group participants. Where there are alternative views these have been identified in the paper.

Industry associations associated with the preparation of this report may not agree with all of the views expressed and may make separate submissions in their own right.

In developing this report, the Working Group – in consultation with the other four Working Groups – has identified a suite of measures that might help achieve the Federal Government's stated objectives regarding Climate Change policy, as enunciated at the first Government/Business Dialogue Roundtable meeting by Ministers. This suite or framework comprises broad based (or "horizontal") measures complemented by more specific sectoral (or "vertical") measures. The overriding objective for government should be to develop a suite of measures that when taken together, will:

- (i) Consistently achieve climate change policy objectives; and
- (ii) At the same time impose the lowest short and long-term cost on all those involved taking into account:
  - The direct and indirect costs to the overall economy and to individual sectors (including short to medium term adjustment costs and assistance to facilitate change);
  - The costs of administering, reporting, monitoring and verification; and
  - Compliance and other costs.

**Key Points:**

- (i) Broad based measures have the potential to deliver greenhouse gas emissions abatement in a cost-effective manner by providing a greenhouse price signal across the economy
- (ii) Australia should adopt a nationally consistent and co-ordinated policy approach in responding to climate change
- (iii) The Working Group supported, in principle, the concept of a comprehensive international emissions trading scheme but was not satisfied the necessary conditions exist to propose the adoption of a national emissions trading scheme at this time
- (iv) The absence of a comprehensive international approach to abating greenhouse emissions constrains the type and design of (national) implementation options to deliver against policy objectives particularly in terms of the impact on the competitiveness of Australian industry competing with countries not subject to an emissions cap or countries that do and exempt their trade-exposed industries
- (v) Against the current international policy background, each broad based measure has been assessed against key criteria (at Section 2.3), and the Working Group has concluded:
  - Emissions trading and taxes fail to meet, or fall short in meeting, the competitiveness, comprehensiveness, certainty and cost-effectiveness criteria in the absence of an effective comprehensive global approach to addressing climate change;
  - Mandatory greenhouse measures which prescribe or reserve specific market targets are considered inefficient and high cost – and are expected to damage the international competitiveness of Australian industry in the absence of an effective global regime;
  - Fiscal incentives are expected to meet the competitiveness criterion. Their performance against the other key criteria will depend on the nature, coverage and design features of the measures themselves. In particular, their cost-effectiveness can be improved by including competitive tendering in their design. Their inherent flexibility means fiscal incentives have a capacity to provide a bridge from Australia's current greenhouse policy position to one where a comprehensive international approach exists;
  - Appropriately structured greenhouse negotiated agreements can provide sufficient flexibility to take account of the different trade competitiveness impacts on sectors and firms. The performance of greenhouse-negotiated agreements against the other key criteria will depend on the nature, coverage and design features of the agreement. Improved cost-effectiveness can be achieved by explicitly structuring the agreement to include elements that incorporate some tendency towards lowering the overall cost of achieving abatement commitments (eg include offset clauses so that firms could purchase or exchange abatement with other participants)

(vi) Developing a broad-based package of fiscal incentives, complemented by negotiated agreements, may offer the most practical 'building blocks' for meeting national greenhouse policy goals

(vii) The Working Group therefore proposes:

- A comprehensive national greenhouse gas monitoring and annual reporting of inventories, actions/improvements and rolling two year forecasts using methodologies proven under the Greenhouse Challenge Program for all enterprises (government and non-government) above a specified emissions threshold should be considered. The system would function as a single national greenhouse gas emission reporting system with 'opt in' provisions for enterprises below the emission threshold to enable their participation in the emission abatement incentive scheme as described below; and

- A comprehensive nation-wide greenhouse gas abatement acquisition scheme whereby government purchases, via an annual tender/bid process, from within Australia (and other countries, under terms to be specified) abatement to meet an agreed (CoAG) increment towards a national goal for net emissions and/or up to an agreed (CoAG) progressive expenditure cap should be considered. The scheme would be open to all sectors of the Australian economy, including government operations<sup>1</sup> and eligible abatement must be over and above the abatement required under the Greenhouse Challenge Program. That is, the Greenhouse Challenge Program would become a pre-requisite for participation in the scheme.

(viii) A number of Working Group members consider an alternative approach to broad-based measures is more appropriate. This is outlined below:

- In order to address the Government's objective of significantly reducing Australia's greenhouse signature over the next 30 years, a suite of policy measures is required, the central feature being the inclusion of a broad based emissions cost into the cost of production. This would ensure that future greenhouse gas emitters incorporate the cost of abating greenhouse gas emissions into their investment, purchasing and operating decisions. The proceeds raised from such an approach would then be available to fund abatement activity and to fund other fiscal incentives

- Emissions trading is seen as the most cost effective approach in the longer term, however it is recognised that there would be difficulty in implementing such a scheme in the short to medium term as not all countries are bound by an emissions cap. It is nevertheless critical to ensure that an emissions cost is included in investment decision making so as not to burden the community with any further sunk investment in emission intensive assets

- In the transition to emissions trading, national mandated measures should be implemented, specifically a national greenhouse abatement scheme that

---

<sup>1</sup> Government operations could also tender (on a cost per tonne of emissions saved) for funds for reductions involving a net cost to government operations. The Government would maximize the effectiveness of internal greenhouse abatement by accepting tenders in sequence of increasing abatement cost up to a level based on either an overall funding limit or a maximum price per tonne of abatement (to avoid spending government funds on excessively priced internal abatement.)

consolidates and expands current state based schemes. A national scheme can be more cost effective by expanding the abatement activities covered and including other liable parties. Importantly it can be readily implemented as NSW, Queensland and more recently Victoria have committed to introducing mandated market based greenhouse schemes that effectively cover 75% of Australia's electricity consumption. A national approach reduces complexity and compliance costs and importantly can be dovetailed into emissions trading and provides industry with important experience and price discovery

- Such an approach can be complimented and supported by other mandated schemes such as the Mandated Renewable Energy Target (MRET) which is an industry development initiative as well as the development of mandated minimum energy performance standards for domestic and non-residential buildings, equipment and appliances.

## 2.1 Introduction

This chapter examines broad based measures to achieve greenhouse gas emission abatement (covering mitigation and sequestration) and has not attempted to explore their role in delivering other desired outcomes such as implementing a targeted climate change Research, Development and Demonstration (RD&D) strategy or adaptation responses to the impacts of climate change. RD&D and adaptation are examined in Chapters 4 and 5 of this paper. Nonetheless, it is noted that some broad based measures examined here may be beneficial in supporting these outcomes. In addition, this chapter presumes that domestic greenhouse policy will allow, to the maximum extent possible, opportunities to access low cost abatement opportunities under the Kyoto mechanisms (Chapter 1 refers).

Broad based measures have the potential to deliver greenhouse gas emissions abatement in a cost-effective manner by providing a greenhouse price signal across the economy. The nature of that price signal can range from imposing a direct cost penalty on emissions, to providing a price incentive to undertake greenhouse gas emission abatement through to indirect pricing of emissions by regulating emission related activities (eg energy efficiency standards).

Measures should positively influence behaviour of industry, investors and consumers so that their investment, purchasing and operating decisions consider the impact of climate change. Measures should ensure that trade and investment distortions are avoided. In this context, the nature of the price signal associated with measures will be crucial. Specifically, the emissions price signal must be passed throughout the supply chain to the ultimate consumer if distortions to trade and investment decisions are to be avoided. Furthermore, the nature of the price signal will determine whether a measure is progressive or not – that is, the measure's impact on low-income consumers.

A national approach is preferred to the less comprehensive and limited system of current and proposed State-based measures.

However, the absence of a comprehensive international approach to abating greenhouse emissions constrains the type and design of (national) implementation options to deliver against policy objectives. This requires the introduction of a system of measures to address national goals pending the longer term progression to, and the adoption of, wider international measures and greater understanding of the opportunity for technology to be further deployed to address the long-term emission reduction task.

### **Explanatory Note:**

The general approach adopted in the development of this paper recognises that in the longer term a comprehensive international approach to abating greenhouse gas emissions will need to be implemented, most likely involving international trading. At present the pre-conditions for this do not exist and we are currently dealing with a range of Commonwealth and State measures – either already in place or proposed.

The key is therefore the manner in which we provide a bridge from our current position to a position where a comprehensive international approach exists.

The significant issues in this are:

- What selection of measures is chosen to deliver the price signal to deliver the abatement?
- How best to build flexibility so as to accommodate changes in circumstances (eg. technology)?

## **2.2 “Broad Based” Defined**

We have adopted the term 'broad based' to describe measures that apply broadly across the economy. A key attraction of any broad based measure is its capacity to generate widespread, transparent, equitable and consistent abatement incentives. It does not follow, however, that any particular “broad based measure” being advanced necessarily meets the criteria set out at Section 2.4 of this Chapter.

It is useful in this regard to view broad based policies for addressing greenhouse policy goals as falling along a continuum. This range of policy measures can be seen to include:

- Consumer information programs (eg energy efficiency ratings);
- Regulatory measures involving mandated (prescribed) targets or outcomes which from an economic perspective are considered inefficient;
- Economically more efficient regulation (eg involving *performance based* requirements rather than *prescribing* how the requirements are met);
- “Market-based” economic measures (eg fiscal incentives, emissions trading) which fundamentally rely on economic incentives, including market interactions, to achieve the desired outcomes<sup>2</sup>; and
- Negotiated agreements can be considered along a spectrum between regulatory policy instruments and market based policy. They have some of the features of each of these and some important differences as well.

---

<sup>2</sup> By definition, these market based economic measures also involve a degree of mandatory regulation. The difference with other regulatory measures is that the subsequent actions of players in the trading market are not specifically mandated and market forces are employed to obtain a more “efficient” outcome

Clearly, any policy proposal involving government intervention has costs and benefits. A cost/benefit or cost effectiveness assessment can lead to improvements in the proposed measure or its rejection (on equity and/or efficiency grounds) in favour of a superior approach.

### **2.3 Measures**

There are a number of types of measures that can be considered as providing a broad based greenhouse price signal in the absence of a comprehensive international approach. For the purposes of this analysis we have considered five broad approaches:

- (i) Emissions trading;
- (ii) Emissions Tax (with or without hypothecation);
- (iii) Other Mandatory arrangements (including mandatory emission benchmarks);
- (iv) Fiscal incentives (abatement tenders/funding, GGAP expansion, depreciation and investment allowances, and tax deductions); and
- (v) Negotiated Agreements

### **2.4 Criteria**

The broad criteria used to assess and evaluate the different options includes<sup>3</sup>:

*Certainty:* Domestic greenhouse policy settings will balance:

- Flexibility on policies and measures to adapt to an evolving future; and
- Reducing uncertainty to assist decision-making on investment, asset replacement and technology development.

*Long Term Perspective:* Shorter-term policy settings should be designed to help meet longer-term objectives.

*Cost-Effectiveness:* Domestic greenhouse policy settings will emphasise cost-effectiveness.

*Competitiveness:* Recognition will be given to the nature of different business sectors including those that are trade exposed.

*Avoiding Disadvantage:* Domestic greenhouse policy settings should avoid:

- Investment distortions between particular projects and locations (both inside and outside Australia);
- Unduly limiting access to the most cost-effective greenhouse gas mitigation options; and

---

<sup>3</sup> These criteria were suggested to the working groups by government and have been used to assess policy responses.

- Disadvantaging early movers and discriminating against new entrants.

*Comprehensive Approach<sup>4</sup>*: Domestic greenhouse policy strategies should balance adaptation, mitigation and disposal policy options.

*Transparency*: Domestic greenhouse policy settings should be transparent.

The Working Group notes the important criterion of equity - being the equitable sharing of the cost burden across the economy – cannot be ignored when the final cost/benefit assessment of the measure is undertaken.

## **2.5 Summary of Assessment**

The assessment of the five broad based measures against the seven criteria has been undertaken in the matrix at **Appendix 4**. A summary of the key findings in that assessment is set out below.

For ease of assessment, each broad-based measure has been examined as if it is the only greenhouse measure to be implemented today. The assessment does not attempt to explore additional or alternative policy initiatives aimed at addressing any deficiencies of the measure identified or for addressing other greenhouse-related matters beyond abatement (eg adaptation, research and development). In this way, the strengths and weaknesses of each broad based measure can be identified and provide a useful basis for considering which measure(s) could form the foundation of a consistent national response to the climate change issue in Australia.

The Working Group notes that the introduction of measures to abate greenhouse gas emissions, including those considered here, would be expected to provide growth opportunities to those industries which offer greenhouse gas emission abatement or related products or services (for example the sustainable energy and environmental services industries). It is further noted that greenhouse gas abatement measures are likely to come at an overall net cost to the economy and that growth opportunities in one part of the economy are likely to be more than offset by losses elsewhere.

An alternative view of the ‘Summary of Assessment’ is included at the end of the chapter.

### **2.5.1 Emissions Trading**

#### *Description of Emissions Trading*

There are two broad types of emissions trading schemes – a “Cap and Trade” scheme and a “Baseline and Credit” scheme:

- Under a “Cap and Trade” scheme the government determines a greenhouse gas emissions cap and issues tradable emissions permits up to this limit. A tradable emissions permit is a legal right to emit a specified quantity of greenhouse gas emissions (for example, one tonne of CO<sub>2</sub> equivalent). This right can be bought or sold on the permit market, with the price determined by the demand and supply of permits. Government can choose how it wishes to allocate permits (including auctioning, grandfathered issue to emitters and mixed systems) and where the point of acquittal will occur; and

---

<sup>4</sup> In the context of the assessment which follows, comprehensiveness means that the measure can be applied across the economy and to all greenhouse gases, sources and sinks.

- Under a “Baseline and Credit” scheme, an emissions baseline is established for greenhouse gas emitters. Liable parties whose emissions are below their baseline will be able to sell credits and those parties with emissions above their baseline can purchase these credits. That is, trading occurs for permits around the baseline.

For the purpose of our analysis we have considered only a “Cap and Trade” scheme.

### *Assessment of Emissions Trading*

The most attractive feature of a global emissions trading system is its potential capacity to deliver least cost and efficient abatement outcomes but this relies on competitive markets to do so. It does this by providing a direct market signal about the price of greenhouse gas emissions. The extent to which this outcome will be achieved is dependent on the extent to which:

- Market distortions are present;
- All greenhouse gases, sources and sinks are covered by the regime; and
- Transactions costs are minimised.

Under the current Kyoto regime, international emissions trading is limited to some developed countries, with many of Australia’s key market competitors – both in export and import-competing markets – unconstrained in this way. Furthermore, the capacity for the Kyoto emissions trading system to deliver a least cost abatement outcome is restrained by such regulatory elements as the commitment period reserve (aimed at achieving high levels of domestic abatement in the developed countries in the scheme), complex CDM rules and potentially costly compliance arrangements as well as the likelihood of some trading players exercising market power.

The Working Group supported, in principle, the concept of a comprehensive international emissions trading scheme but was not satisfied the necessary conditions exist to propose the adoption of a national emissions trading scheme at this time (examined in more detail below).

If, however, an effective comprehensive international emissions trading system was to emerge, then the Working Group considers an independent, in-depth review of all the issues involved in the implementation of a national emissions trading system should be undertaken before introducing such a system. The review should also report on the impacts of both the international and proposed emissions trading systems on the competitiveness of existing and emerging industries. The Working Group believes that this consideration should, amongst other things, acknowledge the following important conditions as being crucial to the efficient and effective implementation of a national emissions trading system:

- The trading system should be as comprehensive as possible – it should cover all sectors, all gases, sources and sinks where it is efficient to do so given transactions costs;
- The allocation system should be fair and equitable;
- The trading system should meet the ‘no disadvantage’ principle; and

- The trading system should replace or complement other Commonwealth and State based greenhouse policy measures.

In the absence of an effective comprehensive global approach to addressing climate change, the Working Group considered a national emissions trading scheme implemented unilaterally in Australia would fail to meet, or fall short in meeting, many of the criteria set out in Section 2.4. Specifically:

- *Competitiveness*: Australian energy and emission intensive industries, which are trade exposed and particularly vulnerable to cost increases, are generally price takers. For these Australian industries, the direct price signal that would arise from the introduction of a national emissions trading system cannot be passed on – it simply imposes an additional cost of production and damages their competitiveness.

In addition to those industries providing greenhouse-related products and services, industries providing products and services related to trading (eg brokers, registry services) could benefit from the introduction of an national emissions trading system;

- *Comprehensiveness*: Emissions trading could, in theory, be applied broadly across the economy (including agriculture, forestry, energy, manufacturing, transport, commercial, waste and tourism sectors) and across all greenhouse gases, emission sources and sinks but practical implementation issues especially related to applying trading to large numbers of small and/or diffuse emitters would tend to limit the coverage. Yet these very emission sources - in such sectors as agriculture, forestry, transport and householders - may provide good opportunities for relatively low cost abatement;
- *Certainty*: Emissions trading provides certainty about meeting a specified abatement outcome (subject to an effective compliance regime) but the emissions price is unknown a priori. Furthermore, the national market price for emission permits is likely to be higher if the national emissions trading scheme is implemented in advance of an effective comprehensive international emissions trading scheme. These factors have a number of implications for investment certainty;
  - Australia's attractiveness as a destination for new investment would be diminished relative to competitors without greenhouse gas abatement obligations;
  - Investment decisions about existing plant and equipment such as asset replacement, retrofitting and updating to new technology, will be based on a higher emissions price than would otherwise be the case. Other potentially beneficial investment decisions elsewhere in the economy may therefore be lost or deferred;
- *Cost-Effectiveness*: emissions trading has a capacity to deliver a least cost and efficient abatement outcome, but, as noted above, a national scheme introduced in advance of an effective comprehensive international emissions trading system is likely to lead to significantly higher emission prices. This impacts on the scheme's cost-effectiveness. In addition, the transaction costs (eg registry development and operation, emissions monitoring, reporting, verification and compliance costs) associated with implementing and operating an emissions trading system can be substantial and will also affect cost-effectiveness.

## 2.5.2 Emissions Tax (with or without hypothecation)

### *Description of Emissions Tax*

Under an emissions tax scheme, the government levies a charge or tax on greenhouse gas emitters. Two emissions tax options are explored:

- The 'without hypothecation' option where the proceeds raised by the emissions tax are deposited into consolidated revenue and are used to fund other government initiatives eg. reducing other taxes or increasing expenditure on services or programs; and
- The hypothecation approach, the proceeds of the emissions tax are used to fund abatement activities, such as purchasing abatement (eg. Greenhouse Gas Abatement Program), funding other fiscal incentives such as accelerated depreciation, greenhouse related research and development, tax concessions and re-investment tax concessions. Where the proceeds are used to fund greenhouse abatement activities then the level of the tax will be lower to achieve a defined level of abatement.

### *Assessment of Emissions Tax*

The overwhelming majority of Working Group members did not support an emissions tax, though a small minority supported an emissions tax where the revenues are hypothecated back to fund abatement activities and fiscal initiatives.

In general, an emissions trading scheme should provide advantages over an emissions tax by allowing participants to manage risk over the longer term. However, the assessment of an emissions tax is similar to that of emissions trading in so much as:

- An emissions tax will deliver an uncertain amount of abatement action for a specified price, that is:
  - If the tax rate is set too low or emissions constraints become more stringent with time, potential volatility in the tax rate could result and impinge adversely on investor certainty especially in the longer term; but
  - If the tax rate is set too high (and thereby delivers more abatement than required) then an emissions tax falls short in meeting the certainty and cost-effectiveness criteria in much the same way as set out under the emissions trading section.
- An emissions tax would damage the attractiveness of Australia as an investment destination relative to competitors in countries without greenhouse gas abatement obligations;
- An emissions tax could be applied economy wide (including agriculture, forestry, energy, manufacturing, transport, commercial, waste and tourism sectors) but there are potential administrative complexities and practical problems including methodologies for emissions measurement in such sectors as agriculture, waste, forestry and transport. It should be noted also that:

- Restricted coverage runs the risk of focusing the abatement burden on those economic sectors which are easiest to target and not on those with the greatest capacity to undertake low cost abatement; and
  - Sequestration actions (for example, revegetation/forestry activities or geological disposal of emissions) can potentially be incorporated into the scheme but this would require the introduction of a rebate on the emissions tax or, for those not liable to the tax, a subsidy to encourage such actions.
- An emissions tax would be regressive, that is, low-income earners are likely to bear an inequitable share of the cost burden.

### 2.5.3 Hybrid Approaches involving Emissions Trading and/or Emissions Tax

As noted above emissions trading and emissions tax do not meet all of the assessment criteria set out at Section 2.4. As a potential means of addressing these deficiencies, hybrid systems – generally (but not necessarily) where emissions trading or emissions tax is complemented by other broad based measure(s) as set out in Section 2.3 - have been proposed. Clearly, there are innumerable combinations available to policy makers but the following hybrid approaches have gained some currency in the current greenhouse policy debate and are examined in more detail below:

- *CoAG Energy Market Review (Parer) Recommendation* is based on emissions trading but with exclusions for energy-intensive users in the traded goods sector;
- *McKibbin/Wilcoxon Hybrid System* which is a mix of emissions trading and tax; and
- *UK Climate Change Levy Scheme/NZ Negotiated Greenhouse Agreement* which are examples of hybrid systems involving an emissions tax and negotiated agreements (explored in more detail below). In some cases, emissions trading aspects are also introduced into the policy design.

#### *CoAG Energy Market Review (Parer Inquiry)*

The Parer Inquiry envisages a cross sectoral emissions trading system but with exclusions for energy-intensive users in the traded goods sector until Australia's international competitors introduce similar schemes. Excluded entities are required to meet world's best practice in relation to their energy use.

The Working Group assesses, in the absence of an effective comprehensive global approach to addressing climate change, the Parer Inquiry's recommendation as similar to that set out above for emissions trading, but with the following additional comments:

- *Cost-Effectiveness*: the proposed exclusion of energy-intensive users in the traded goods sector suggests that the resulting domestic emissions market would be comparatively small and, thus, market participants are likely to see a higher cost for emissions than that of domestic trading systems applied more widely;
- *Competitiveness*: while the Parer Inquiry recognised the possible adverse impacts on energy intensive users, the proposed exclusion is not expected to address the difficulty for trade exposed emissions-intensive industries. Specifically, the recommended exclusion;

- May not include energy-intensive import-competing industries even though these industries would suffer competitive damage under emissions trading;
- Would not cover other trade exposed industries which are emissions intensive but not energy intensive (for example, the livestock sector);
- Requires excluded entities to meet world's best practice energy use which fails to take account of the existing technologies being used by these entities. Under these circumstances it seems unlikely that many entities would be eligible, and, in addition;
- There are considerable practical issues involved in determining eligible energy-intensive users in the traded goods sector.

### *McKibbin/Wilcoxon Hybrid System*

Under this proposal, the government would require producers of energy within its borders to have an annual emissions permit for each ton of carbon embodied in their energy produced and sold domestically or imported. The government would issue long-term emissions permits (endowment) equal to a specified fraction of a base period emissions. The government would also be able to supplement the supply of permits, when necessary, by selling additional short-term permits at a stipulated price. The permits could only be used in the country of issue, that is, there is no international trading.

Each long-term permit would allow the holder to emit one tonne of CO<sub>2</sub> each year. The long-term permits would be given away or auctioned or distributed by the government as it sees fit. Once distributed, the long-term permits could be bought or sold among firms or even bought and retired by environmental groups. No additional long-term permits could be distributed, but the government could buy back permits in future years if new evidence reveals a necessity to cut emissions. The long-term permits could be perpetual, or could be issued with expiration dates —10, 20, and 50 years, for example — to give governments more flexibility. In the latter case, each category would have its own trading market, and prices for each would emerge as they do for other asset markets.

The Working Group assesses, in the absence of an effective comprehensive global approach to addressing climate change, the McKibbin/Wilcoxon Hybrid System as similar to that set out above for emissions trading, but with the following additional comments:

- *Comprehensiveness*: the hybrid system, as currently designed, only applies to the energy sector and therefore fails to meet the comprehensiveness criterion;
- *Competitiveness*: specific provisions would be required to accommodate industry's competitiveness concerns particularly in relation to import-competing industries; and
- *Cost-Effectiveness/Certainty*: the lack of access to potentially low cost international abatement options (including potential access to Kyoto mechanisms in current circumstances) would suggest the approach is likely to result in higher costs and would not be informed at all by an efficient international price.

## *UK Climate Change Levy Scheme/NZ Climate Change Policy*

A number of schemes along the lines of the above policies are emerging internationally. Both schemes impose a tax on emissions although, in the UK case, the levy is not directly on emissions but on a broad range of fossil fuels and, in the case of NZ, the charge only applies to CO<sub>2</sub>. The proceeds raised by the UK levy are used to reduce employment taxes and to fund greenhouse abatement activities and the NZ emissions charge revenue will be recycled.

Both schemes provide an exclusion for entities from the emissions tax provided they enter into a negotiated agreement with the government which sets out abatement and other related activities to be undertaken. In the UK, energy intensive industry can choose to obtain an 80% discount on the levy provided they comply with the commitments defined in the negotiated agreement. Subsequent to the introduction of its climate change levy, the UK has also incorporated emissions trading elements into its climate change policy. In the NZ case, entities who are found to be “competitiveness-at-risk” are exempted from the emissions charge, but must enter into a negotiated greenhouse agreement where the firm agrees to manage its greenhouse gas emissions towards an agreed and more emissions efficient baseline.

Hybrid policies consisting of an emissions tax and emissions trading operating in conjunction with negotiated agreements, such as those outlined above, are emerging internationally as a potential way of addressing industry competitiveness issues in the current global greenhouse policy environment. Clearly, these examples do not meet a number of the assessment criterion set out above (eg comprehensiveness, cost-effectiveness). With improved design features (see negotiated agreements assessment below), some of these concerns could be ameliorated.

Nonetheless, there are a range of views across industry about the effectiveness of this type of hybrid approach but a key consideration is the eligibility criteria used for determining which entities may gain a concession on the tax/trading system and enter into a negotiated agreement.

### **2.5.4 Other Mandatory Measures**

#### *Description of Other Mandatory Measures*

Other mandatory arrangements can cover a broad range of measures and have historically been targeted to industry sectors or types of activities. Government introduces regulations that limits activities or requires greenhouse emitters or intermediaries to achieve targeted outcomes that lead to a reduction in greenhouse gas emissions.

Examples of such measures include the Commonwealth’s Mandated Renewable Energy Target (MRET) and the Queensland 13% Gas Scheme that focus on obtaining higher penetration of particular fuel sources in the energy market which, in turn, is expected to deliver long term greenhouse gas abatement. MRET places a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of an additional 9,500GWh of renewable energy per year by 2010. The objectives of the MRET (as set out in the enabling legislation) are:

- To encourage the additional generation of electricity from renewable sources;
- To reduce emissions of greenhouse gases; and

- To ensure that renewable energy sources are ecologically sustainable.

The Queensland 13% Gas Scheme is part of a package of Queensland Government's Energy Policy that seeks to:

- Diversify the State's energy mix towards the greater use of gas and renewable energy;
- Facilitate the supply of abundance and competitively priced gas in Queensland;
- Facilitate the development of gas fired power stations; and
- Reduce the growth of greenhouse gases.

The 13% Gas Scheme will require electricity retailers and other liable parties to source at least 13% of their electricity sold in Queensland from gas-fired generation from 1 January 2005. The Scheme is to remain in force for a period of 10 years or until emissions trading is introduced, at which time the policy would be reviewed.

The NSW Electricity Greenhouse Benchmark Scheme is a greenhouse gas abatement scheme that also includes sequestration and energy efficiency elements. Under this scheme, from 1 January 2003, NSW retail electricity supply licensees are required to meet mandatory greenhouse gas reduction targets based on individual benchmarks apportioned according to market share. The scheme's overall benchmark target is set at a 5% reduction in per capita emissions from 1989/90 levels by 2007. Retailers failing to meet their benchmarks are penalised \$10.50 per tonne of CO<sub>2</sub> equivalent on their excess level of emissions.

Minimum energy performance standards can also be seen to be a mandated measure and provide a way of ensuring appliances, plant and equipment meet minimum energy efficiency standards (see Chapter 3).

#### *Assessment of Other Mandatory Measures*

While the above-mentioned mandated measures provide a guide to the features of some existing 'other mandatory measures', the assessment of a broad-based package of other mandatory measures was made more difficult because the design details of the total package are not fully known. Nonetheless other mandatory measures were assessed as generally performing below that of other measures across all of the above criteria.

In particular, the Working Group considers such other mandatory measures would be expected to:

- Result in higher cost outcomes to achieve some pre-determined abatement target compared with emissions trading or tax as they restrict access to potentially lower cost abatement options to meet the pre-determined abatement target. There are a number of reasons for this including:
  - State-based measures generally access only abatement opportunities in that State or by companies operating in that State;
  - Sectoral based measures generally access only abatement opportunities in that sector unless specific conditions apply; and

- Measures can limit the range of abatement opportunities, for example disposal options are often not included.
- Damage the international competitiveness of Australian industry in the absence of an effective global regime. Given the expected higher costs, the level of damage is likely to be greater than that of emissions trading and tax;
- Provide limited opportunities for changing policy direction over time once implemented; and, furthermore
- Are unlikely to provide transparency about emissions price nor the cost of abatement actions.

### **2.5.5 Fiscal Incentives**

#### *Description of Fiscal Incentives*

Fiscal measures are government initiatives or programs that are funded from consolidated revenue that will result in greenhouse gas emission abatement. Some examples are:

- Accelerated depreciation and investment allowances for new business investment that involves reduction in greenhouse gas emissions;
- Providing a tax deduction for residential consumers that invest in appliances and equipment that lead to a reduction in greenhouse gas emissions. Consumers that purchase Green Power could also receive a tax deduction for the Green Power Premium;
- Purchasing abatement through competitive tendering processes, which could be developed from the concept underlying schemes such as the Greenhouse Gas Abatement Program (GGAP). The GGAP program, which has a total budget allocation of \$400 million, involves abatement proponents submitting proposals to the AGO for funding. GGAP projects are assessed on a range of criteria of which cost-effectiveness based in a \$/tonne cost of abatement is a key element. Furthermore, GGAP projects need to represent abatement that is technically feasible (not research and development) and additional, that is, would not have occurred in the normal course of business;
- Funding industry development activities that will lead to a reduction in greenhouse gas emissions through building industry capacity and capability, examples being the Renewable Energy Commercialisation Program and PV Rebate Programs; and
- Funding of research and development activities aimed at reducing greenhouse gas emissions long term.

#### *Assessment of Fiscal Incentives*

The performance of fiscal incentives against the criteria will depend on the nature, coverage and design features of the incentives themselves. However, the design of fiscal incentives is sufficiently flexible to allow a strong showing against the above criteria. In particular:

- Fiscal incentives provide considerable policy flexibility that means they can provide a potentially adaptable way of meeting national greenhouse policy goals both over time and in changing circumstances. That is, they have a capacity to provide a bridge from our current greenhouse policy position to a position where a comprehensive international approach exists;
- The cost-effectiveness of fiscal incentives can be improved by, for example, including elements of competitive tendering in the design of the measure;
- Fiscal incentives would not be expected to damage the international competitiveness of Australia's trade-exposed industry because they provide a price incentive to undertake greenhouse gas abatement rather than a cost penalty; and

As noted above, fiscal incentives require Government funding and this type of funding would be justified for an appropriately designed package of fiscal incentives on the following grounds:

- Climate change is a community issue warranting a community response. Furthermore, most human activity impacts on the level of greenhouse gas emissions in the atmosphere so there is a strong argument for the community to bear the cost burden associated with responding to climate change;
- Fiscal incentives, particularly those that adopt a market type approach to maximise abatement, could utilise existing government abatement measure funding by providing a diverse range of incentives to enterprises; and government operations – and provide a mechanism to ensure funds are not consumed by excessively expensive 'favoured' projects; and
- Any additional funding required would represent an investment of a dividend from the strong economic growth since the Kyoto target was agreed – and from growth available from avoiding policies that would divert investment and economic growth away from Australia (through loss of competitiveness) in the future. [A significant reason why Australia is facing a more difficult task than was expected when the 'target' was agreed in Kyoto is that the subsequent economic growth has exceeded (and may continue to exceed) that expected at that time (1997).]

The Working Group fully acknowledges that funding a package of fiscal incentives is not costless to the economy and may have an impact on consolidated revenue priorities, and depending on the way it is funded, could have an impact on industry competitiveness.

## **2.5.6 Greenhouse Negotiated Agreements**

### *Description of Greenhouse Negotiated Agreements*

Greenhouse Negotiated Agreements (NAs) involve a significant element of negotiation between an industry entity (eg a company or an industry association) and government(s) (eg a representative government agency). They involve agreements to establish a long-term emission abatement commitment on the part of the industry entity. This commitment could involve energy efficiency targets, R&D abatement activities, technology upgrades, purchase of new emission abating capital equipment, abatement targets, etc. They may also involve explicit undertakings on the part of the government.

Greenhouse negotiated agreements are voluntary in that the industry entity can weigh up whether or not to participate but, once negotiated, these agreements may involve binding commitments on the industry party. Governments, of course, can provide strong incentives to participate through the choice of the background regulatory framework (for example, emissions trading or emissions tax) against which the industry entity assesses its costs and benefits of entering into a greenhouse negotiated agreement.

An Australian example of a greenhouse-negotiated agreement is the Generator Efficiency Standard program that seeks to move towards best practice efficiency for the fossil-fuel electricity generation and thereby deliver reductions in the greenhouse gas intensity of energy supply.

The Greenhouse Challenge Program is an example of a voluntary greenhouse negotiated agreement without binding commitments. The Program - launched in 1995 - is a voluntary co-operative partnership between the national Government and industry that aims, amongst other things, to achieve maximum practicable greenhouse gas emission abatement performance by members. The Challenge has over 800 members (covering some 47% of industry emissions) and total annual emissions savings in 2001 were reported at more than 19.2 Mt CO<sub>2</sub>-e. Participating organisations (including companies, government agencies and industry associations on behalf of their members) sign agreements with the Government to:

- Prepare an emissions inventory and emissions forecasts;
- Identify and implement a cost effective and practicable greenhouse gas abatement action plan;
- Annual reporting of emissions and progress with implementing the abatement action plan; and
- Accept independent verification of progress reports.

#### *Assessment of Greenhouse Negotiated Agreements*

The performance of negotiated agreements is similar to that of fiscal incentives and will depend on the nature, coverage and design features of the agreement.

NAs potentially represent a policy instrument that is more flexible and accommodating with respect to abatement costs and competitive circumstances than other regulatory and taxation based policies. For government, they can facilitate a more cooperative approach to emission abatement and potentially reduce the economic impact of meeting a national emissions objective – that is, negotiated agreements are a flexible measure which have a capacity to provide a bridge from Australia's current greenhouse policy position to one where a comprehensive international approach exists. They can also assist with issues of timing, coverage and equity that emerge in considering greenhouse policy measures.

Key features of assessment on negotiated agreements include:

- Their cost-effectiveness can be improved by explicitly structuring the agreement to include elements that incorporate some tendency towards lowering the overall cost of achieving abatement commitments (eg include offset clauses so that firms could purchase or exchange abatement with other participants);

- The cost of negotiating a negotiated agreement may be considerable and must be factored into the overall assessment;
- Appropriately structured negotiated agreements can provide sufficient flexibility to take account of the different trade competitiveness impacts on sectors and firms; and
- Their capacity to adapt to developments in the greenhouse policy environment over time.

## 2.5.7 Other Issues

### *Development of Greenhouse Information Infrastructure*

No matter which broad based measure or measures are implemented, further work is required to develop and implement a practical and realistic greenhouse information infrastructure to underpin the operations of greenhouse policy measures. This includes developing such aspects as:

- Estimation and measurement methodologies for all greenhouse gases, sources and sinks;
- Monitoring techniques for greenhouse gas emissions and sinks;
- Progress reporting of emissions; and
- Processes to verify reported emissions.

Significant work has already been undertaken in this area including under the Greenhouse Challenge Program and the joint government-industry Data Collection and Scoping Study.

In particular the Greenhouse Challenge Program has:

- Established an extensive data base of members' emissions inventories, forecasts and abatement savings. Consequently:
  - Industry members have gained considerable knowledge and experience about estimating and reporting greenhouse gas emissions; and
  - Government has a valuable tool for informing future decisions about greenhouse policy.
- Developed a reporting pro-forma to assist members in meeting their progress reporting commitments (streamlined reporting for small-to-medium sized enterprises is also being examined);
- Conducted two rounds (and one pilot round) of independent verification which again is informing industry and government partners about practical ways of implementing such verification; and
- Revised its implementation plan which, amongst other things, seeks to pursue more sectoral agreements under the Program. Existing sectoral agreements have proved to be an effective and efficient way of capturing greenhouse gas abatement across and whole industry sector.

## *Projection Modelling*

Projections of Australia's future greenhouse gas emissions are a key information input to Australia's greenhouse policy agenda. Projections provide a basis upon which strategic assessments of Australia's greenhouse policy approaches - including evaluating Australia's progress towards meeting greenhouse gas emission targets - can be made. Under the Framework Convention on Climate Change, Australia is required to regularly report greenhouse gas emission projections to 2010 and 2020.

Projections methodology is still evolving and considerably more research is required to improve the reliability, consistency and robustness of projections.

The Working Group therefore considers the AGO's emissions and abatement modelling capacity should be augmented so that more reliable and robust projections can be developed and used to effectively inform policy development.

## **2.6 Conclusions**

The Working Group considers Australia should adopt a nationally consistent and co-ordinated policy approach in its response to climate change. Broad-based measures have the potential to provide the building blocks for that national approach and deliver greenhouse gas emissions abatement in a cost-effective manner across the economy.

Furthermore, Australia's national greenhouse policy response must recognise that in the longer term a comprehensive international approach to abating greenhouse gas emissions will need to be implemented, most likely involving international trading.

The Working Group supported, in principle, the concept of a comprehensive international emissions trading scheme but was not satisfied the necessary conditions exist to propose the adoption of a national emissions trading scheme at this time.

If an effective comprehensive international emissions trading system emerges, then the Working Group considers an independent, in-depth review of all the issues involved in the implementation of a national emissions trading system should be undertaken before introducing such a system. The review should also report on the impacts of both the international and proposed emissions trading systems on the competitiveness of existing and emerging industries. The Working Group considers the following important conditions are crucial to the efficient and effective implementation of a national emissions trading system:

- The trading system should be as comprehensive as possible – it should cover all sectors, all gases, sources and sinks where it is efficient to do so given transaction costs;
- The allocation system should be fair and equitable;
- The trading system should meet the 'no disadvantage' principle; and
- The trading system should replace or complement other Commonwealth and State based greenhouse policy measures.

In the absence of a comprehensive international approach to abating greenhouse emissions, however, the type and design of (national) implementation options to deliver against policy objectives are constrained.

Against this background, each broad based measure has been assessed against the criteria as set out above and the Working Group has concluded:

- Emissions trading and taxes fail to meet, or fall short in meeting, the competitiveness, comprehensiveness, certainty and cost-effectiveness criteria in the absence of an effective comprehensive global approach to addressing climate change;
- Mandatory measures which prescribe or reserve specific market targets are considered inefficient and high cost – and are expected to damage the international competitiveness of Australian industry in the absence of an effective global regime;
- Fiscal incentives are expected to meet the competitiveness criterion. Their performance against the other key criteria will depend on the nature, coverage and design features of the measures themselves. In particular:
  - Their cost-effectiveness can be improved by including competitive tendering in their design; and
  - Their inherent flexibility means fiscal incentives have a capacity to provide a bridge from Australia's current greenhouse policy position to one where a comprehensive international approach exists.
- Appropriately structured greenhouse negotiated agreements can provide sufficient flexibility to take account of the different trade competitiveness impacts on sectors and firms. The performance of greenhouse negotiated agreements against the other key criteria will depend on the nature, coverage and design features of the agreement; and
- Improved cost-effectiveness can be achieved by explicitly structuring the agreement to include elements that incorporate some tendency towards lowering the overall cost of achieving abatement commitments (eg include offset clauses so that firms could purchase or exchange abatement with other participants).

Thus, developing a broad-based package of fiscal incentives, complemented by negotiated agreements, may offer the most practical 'building blocks' for meeting national greenhouse policy goals.

#### *Developing a Broad-Based Measure*

Recognising the current constraints on potential national policy implementation options, together with the need to meet the criteria set out in Section 2.4, the Working Group proposes a policy package based on the identified broad-based measure 'building blocks' of fiscal incentives and/or negotiated agreements.

The proposal envisages that, for all emitters over a specified minimum threshold<sup>5</sup>, the Greenhouse Challenge Program would operate as the single national system for monitoring and reporting emissions inventories, abatement actions and achievements. In so doing, the first basic steps towards a national greenhouse gas emissions management scheme are created, namely:

---

<sup>5</sup> The level of the specified minimum threshold would be negotiated but would need to take account of the potential impacts on small business, costs associated with administering an expanded Program and the objective of improved coverage of industry greenhouse gas emissions under the Program.

- Preparation of inventories and forecasts based on identification and measurement of emission sources and sinks;
- Assessment of opportunities to take abatement action; and
- Performance tracking and verification.

This action should identify new practicable and cost effective abatement actions – possibly over 10 Mt CO<sub>2</sub>-e of new abatement<sup>6</sup> - from enhanced participation in the Greenhouse Challenge Program and avoid the need for similar State-based monitoring and reporting requirements.

In addition, a comprehensive national greenhouse gas abatement acquisition scheme is proposed. This scheme aims to provide the necessary financial incentives for industry and others to undertake those practicable greenhouse gas abatement (including sequestration) actions which are not yet cost effective. By using a tendering process, the measure seeks to identify the next tranche of low cost abatement opportunities up to a (CoAG) agreed abatement level or cost. Participants in the scheme would need to demonstrate that they have or are taking all practicable and cost effective abatement actions (so called 'additionality' test) – hence the proposal envisages Greenhouse Challenge Program membership as a pre-requisite for scheme participation.

### **Alternative View**

A number of Working Group members have an alternative view about the assessment of broad-based measures and their views are set out below.

Broad based greenhouse measures should be the central feature around which other greenhouse policies are based. Greenhouse emissions are an externality that is presently not factored into the cost of production (specifically energy costs). For the efficient allocation of resources, greenhouse gas emitters must incorporate the cost of abating greenhouse gas emissions into their investment, purchasing and operating decisions.

If greenhouse costs are not factored into production costs then additional activities and investments will take place that create significant greenhouse gas emissions (eg new coal fired power stations and aluminium smelters) without the beneficiaries of such investments being required to pay for the greenhouse gas emissions that they create. Indeed other sectors of the economy will be asked to pay for this cost of abatement. This results in a loss of community welfare and the creation of additional sunk emission intensive assets that will create a burden for the community for many years to come.

In assessing the different broad based approaches, emissions trading was seen to best meet the required criteria. The cost impacts on industries that compete with countries that are not subject to an emissions cap is seen as a transitional issue that could be addressed by the manner in which permits were allocated.

It was also recognised that it may not be practicable to implement emissions trading in the short to medium term and that other mandated approaches could be adopted as a transition to emissions trading.

---

<sup>6</sup> Based on the Greenhouse Challenge Program's current abatement of 19.2 Mt per year and increasing participation in the Program from 47% of industry emissions to over 75%.

There are several approaches that were considered to be the most effective and consistent with the transition to an emissions trading scheme. These approaches range from:

- Implementing a climate change levy, similar in concept to the scheme implemented in the UK. Proceeds raised from the levy could fund fiscal measures and abatement activity; or
- Expansion and extension of a market based emission abatement scheme similar to that implemented in NSW but expanded to cover other sectors and other liable parties so as to reduce the cost of the scheme.

The latter approach may be more readily implemented as the Queensland government has committed to a 13% gas scheme and the Victorian government has also committed to introduce a greenhouse scheme. This will mean that over 75% of Australia's electricity consumption will be covered by some form of broad based greenhouse measure. Modelling undertaken for NSW Treasury shows that by extending the NSW scheme to other National Electricity Market states would deliver 35 million tonnes of abatement beyond "business as usual" and would cost less than \$2.23/MWh.

A national approach reduces complexity and compliance costs and importantly can be dovetailed into emissions trading and provides industry with important experience and price discovery.

Such an approach can be complemented and supported by other mandated schemes such as the Mandated Renewable Energy Target (MRET), which is an industry development initiative as well as the development of mandated minimum energy performance standards for domestic and non-residential buildings, equipment and appliances.

To facilitate the transition to a lower emission intensity economy, policy must support the development of new abatement technologies and industries. Fiscal measures and incentives will be required, specifically to support industry development and research, development, demonstration and commercialisation. These measures can be funded through the proceeds raised from incorporating an emission cost into the cost of production.

### 3 END-USE ENERGY EFFICIENCY

#### Key Points:

- (i) Energy efficiency is a key least cost path to achieving abatement outcomes in the short to medium term and is a useful part of a sound transitional strategy
- (ii) Energy efficiency investments and practices potentially provide opportunities for both economic and greenhouse benefits. Market failures that impede end-use energy efficiency need to be identified and, where cost-effective, addressed
- (iii) Market transformations need to occur to encourage energy efficiency. Industry supports voluntary initiatives and appropriate regulatory intervention (including an expansion of the minimum energy performance standards program and minimum energy efficiency standards for all new and refurbished buildings), coupled with financial incentives (industry supports the adoption of an approach like the U.K Government scheme to energy efficiency) to achieve continual improvements in end-use energy efficiency
- (iv) The drivers for substantial energy efficiency related abatement will predominantly stem from capital investments induced by demonstrated returns, RD&D progress and expenditure, attitudinal/cultural change and fiscal incentives
- (v) The development of a National Energy Efficiency Framework should be considered as a means to better utilise existing resources and to pursue more effectively those energy efficiency related measures agreed to by Ministers in 1998 under the National Greenhouse Strategy
- (vi) More nationally consistent and rigorous evaluative approaches are required to assess the merit of domestic energy efficiency programs. Mandatory and voluntary programs need to be reviewed regularly to ensure optimal outcomes. A nationally consistent definition of desirable project cost effectiveness, such as (\$x/ Mt CO<sub>2</sub>-e) is an essential first step in developing a transparent yardstick for government program design and improvement

#### 3.1 Background

End-users of energy (especially those in the residential, commercial and industrial sectors) contribute to the greenhouse emissions signature in several ways – being the emissions from stationary energy use, transport energy use, industrial processes, biosphere and waste disposal. With the objective of improving the stationary energy end-use of these sectors, a number of policy measures supported by industry are provided, as is a review of current end-user energy efficiency programs.

Looking specifically at the manufacturing, construction, agriculture, forestry, fishing and mining sectors (ie the 'industrial' sector), stationary energy use alone accounts for

approximately 32%<sup>7</sup> of total CO<sub>2</sub>-e emissions. Further, the stationary energy use of the commercial (8%) and residential (12%) sectors accounts for a further 20% of total CO<sub>2</sub>-e emissions.

Emissions from the stationary energy sector are projected to grow 150% by 2010 compared to 1990 levels<sup>8</sup>. Emissions from energy use in non-residential buildings are projected to double to 60Mt over the same period. However, estimates by the ESAA and the Institution of Engineers Australia have highlighted that energy efficiency projects in the built environment may reduce emissions growth by 20Mt. In dollar terms, this represents a \$10b saving in energy infrastructure augmentation and a \$3b pa cost saving by 2010.

Thus in terms of Australia's net national emissions, the industrial, commercial and residential sectors, through consumption of stationary energy, accounts for approximately one-half of total national emissions.

In parallel with programs to reduce the emissions intensity of energy supply and energy conversion activities, considerable importance should be placed on bolstering and expanding the current energy efficiency programs as a means to improving Australia's greenhouse gas signature. Such programs have the potential to produce savings, increase Australia's international competitiveness and provide strong greenhouse abatement.

### **3.2 Current End-User Efficiency Programs**

Current end-use energy efficiency policy approaches fall into two distinct categories:

- (i) Policies that attempt to assist the 'demand-side' (ie end-use consumers, manufacturers etc) to incorporate 'energy efficiency' in their day-to-day activities.

These measures attempt to address a number of market impediments that exist, including: the lack of focus end-users place on the benefits of greater energy efficiency, comparatively low energy costs in Australia; asymmetric information about the benefits (i.e long-run cost savings); perceived risks associated with the performance of new technology; split incentives; and the fact that energy often represents a small component of a business's costs.

Commonwealth government programs that fall under this category include the Cities for Climate Protection and Greenhouse Challenge Program. Programs administered at the state level by agencies such as the Sustainable Energy Development Authority (NSW) also add to the current suite of measures currently being implemented.

- (ii) Policies that attempt to encourage the 'supply-side' (including equipment manufacturers, appliances, plant and equipment manufacturers, builders, developers) to supply the market with various goods and services at a price, quantity, type and specification that facilitates greater end-use energy efficiency.

These measures also attempt to address market impediments, namely: procurement practices which are based on lowest initial cost rather than lowest life cycle cost; a lack of incentive to improve energy efficiency sometimes exists;

---

<sup>7</sup> George Wilkenfeld and Associates and Energy Strategies (2002) Australia's National Greenhouse Gas Inventory 1990, 1995 and 1999: End Use Allocation of Emissions. Australian Greenhouse Office, Canberra

<sup>8</sup> Institution of Engineers Australia National Sustainability Framework Task Force on Building and Construction Report

regulated energy prices have not accurately reflected the negative externalities associated with their production and use; the high cost associated with technology development; and, the high transaction costs of individuals seeking out efficient appliances, plant and equipment.

Examples of State and Territory and Commonwealth government programs that fall under this category include Minimum Energy Performance Codes and Standards for Domestic Appliances and Industrial Equipment and Energy Performance Codes and Standards for Housing and Commercial Buildings.

It should be noted that although past and current programs have generally performed well in identifying the opportunities that improved energy efficiency can bring to the industrial, commercial and residential sectors, they have not performed well in stimulating investment in available options (MEPS is perhaps the exception).

### **3.2.1 Government Intervention must be warranted**

Due to the market failures that exist it is reasonable to expect that there is a continuing role for government in terms of regulatory and advisory intervention. However, while market failures or inequity are necessary for government intervention, they are not always sufficient reasons for intervention.

In principle, industry supports government intervention that results in a change in behaviour and an improvement in the functioning of the market in preference to regulation that has the potential to distort market behaviour and the efficient allocation of resources.

In relation to energy efficiency, industry supports a mix of regulation (to ensure minimum performance standards) in conjunction with financial incentives to induce higher performance and best practice.

Further, outcome focussed regulation, if effectively implemented, can be an effective catalyst to innovation and can play an important role in the development of market access opportunities.

If regulation is deemed necessary, sound public policy demands that an assessment of its costs and benefits is undertaken. This analysis must pay due regard to whether an instrument of regulation, albeit mandatory or voluntary, will achieve a suitable blend of improved market efficiency and least-cost abatement.

The successful completion of Regulatory Impact Statements (RIS) is an essential element of policy formulation and a process that could be better utilised by governments to determine whether regulation is warranted. Regulation should be outcome focussed rather than process prescriptive.

Attention must also be placed on continually assessing whether regulatory measures are having an adverse impact upon industry competitiveness, productivity and profitability across the board. Where this is found, there is a role for government to either to adjust the regulation or to provide transitional assistance for businesses to meet the higher standards.

### **3.2.2 More Rigour required in Assessing Domestic Programs**

In relation to overall program effectiveness, industry suggests that a consistently applied benchmark (that is revised) such as the dollar cost of reducing per tonne of CO<sub>2</sub>

equivalent (ie \$x/ Mt CO<sub>2</sub>-e) should be established for each program to ensure cost effectiveness, a basis for comparison, and to act as an incentive for continued improvement.

However, cost-effective energy abatement should not be the only criteria used to assess the relative merits of a program. Criteria such as the program's ability to foster continual, long-term improvement; encourage business ownership of the issue; and promote industry-government co-operation should also be a priority.

The adoption of such criteria will ensure that those programs that are not achieving 'high' cost effectiveness, but for other reasons remain 'effective' as an instrument, are improved upon.

In relation to assessing the energy efficiency merits of projects, goods and services, refer to section 3.3.4 – *Benchmarking Abatement*.

### **3.2.3 1998 National Greenhouse Strategy**

Endorsed by State, Territory and Commonwealth Governments in 1998, the objective of the National Greenhouse Strategy (NGS) was to outline a comprehensive strategy for improving end-use energy efficiency.

To date, the State, Territory and Commonwealth Governments have not fully adopted nor reported upon all of the end-use energy efficiency strategies agreed upon. In terms of measures that have the potential to reduce greenhouse gas emissions and improve the operation of markets, industry would consider it essential for governments to undertake a review of the NGS, and in particular, a review of why the various governments have not implemented fully the agreed end-use energy reforms.

## **3.3 ENERGY EFFICIENCY POLICY APPROACHES AND MEASURES SUGGESTED BY INDUSTRY**

In formulating new and reforming existing domestic programs, it is important that the drivers for greater economic efficiency and greenhouse gas abatement are identified and clearly understood.

The drivers for the residential, commercial and industrial sectors to adopt more energy efficient practices need to move beyond the traditional approaches of:

- (i) Sending the message that energy costs can potentially be reduced, for perhaps a moderate cost-effective outlay; and
- (ii) There are positive environmental impacts arising from the more efficient use of energy.

Although these drivers have encouraged some businesses to marginally increase their abatement activities by investing in energy efficient equipment and practices, they are not the key drivers for substantial energy efficiency related abatement.

Substantial, cost-effective energy efficiency abatement can be achieved through capital investment (including major retrofits and refurbishments of existing assets) induced by demonstrated returns on investment. RD&D progress and expenditure, fiscal incentives and attitudinal/cultural change are also important drivers. 'Bottom-line' and related greenhouse abatement benefits can also be achieved through utilisation of a variety of regulatory instruments and government financial assistance measures.

Further, because energy costs can represent a small proportion of industry input costs for a number of organisations, it is important to promote other tangible benefits for industry, such as better-quality manufactured products, products meeting emerging market demand, less down-time, lower material cost, improved productivity, and less reworking.

Below are a number of policy options and measures that could be examined by governments as a means to address these drivers.

### **3.3.1 Capital Investment**

Substantial energy efficiency related abatement can be achieved from capital investment, retrofits and refurbishments. To facilitate these actions, incentives must exist to promote investments in technology, systems, infrastructure and energy use planning. At present, there are a number of market impediments preventing this, including:

- Split incentives: where the agent who pays for the saving measure does not benefit from some or all of the savings;
- Lack of access to capital;
- Lack of information, inappropriately high perceptions of risk, high transaction costs, complexity of decision criteria;
- Energy efficiency being seen as a non-core business activity;
- Lack of access to appropriate expertise, equipment, services and finance; and
- Government policies that undermine competitiveness and skew investment decisions.

Governments can do much to encourage firms to bring forward or speed up the rate by which they voluntarily replace their capital. Replacement of existing plant and equipment (before it has lived its effective life) could be encouraged with financial incentives if preferred energy-efficiency technologies exist and are supported. Technological change in turn will create efficiencies in not only a productive capacity but in an emissions abatement capacity as well.

In the short term, because of the general uncertainty associated with abatement activity both domestically and internationally, and general economic and investment cycles, it is likely that organisations will only make minor changes to processes and capital to realise energy efficiency savings, and as such, it is likely that organisations will not invest heavily in capital in the near future.

Substantial capital investment must therefore be driven by other factors. The return on investment is an important consideration for Australian industry. In that, industry must be convinced that returns can be realised if investments in technology, systems, infrastructure and energy use planning are to occur.

However, as research has shown, investment returns are not the only or even the most important issue. Other key factors include the value and scarcity of capital and its allocation within business, business culture and management, downtime, process uncertainty and product quality. These issues are highly individualistic for each business.

In the medium to long-term (post 2008), it is likely that a carbon-constrained environment will induce substantial energy efficient technological developments. This will be in response to changing market dynamics (ie changing consumption patterns), regulatory requirements, and a need to develop new competitive advantages. It is therefore critical that Australian industry is able to keep pace with these developments and successfully utilise them to stay internationally competitive.

To achieve significant greenhouse gas abatement, and to a point, retain the competitiveness of Australian industry post 2008, it is important that a foundation for accelerated technological change and voluntary capital investment is embedded today. Means by which this can be encouraged include:

- Government promotion of greater RD&D and innovation (see below);
- Demonstration projects that prove the commercial viability of technologies;
- Delivery mechanisms such as Energy Performance Contracting (EPC). EPC addresses market barriers by guaranteeing energy and greenhouse savings and promoting multi technology solutions;
- Audits that review Australian industry's current stock of capital, technologies and skills. Coupled with an examination of world best practice developments, gaps can be identified and strategies implemented;
- Programs such as MEPS (covering equipment, appliances and building codes) are an effective means to promote capital investment and achieve minimum energy efficiency gains. When combined with financial incentives, it is possible to stimulate additional performance and savings (i.e. given the high costs and long life of capital and plants); and
- The establishment of a Federal Government co-ordinated and managed register for sustainable technologies and efficient equipment. Once an item is entered on the register it can be used by other industry sectors in meeting efficiency targets and applying for tax and RD&D incentives.

Further, financial or tax-based incentives (eg a change in the depreciation regime) are an effective means to induce retrofits or refurbishments and improve capital cost recovery generally. In the case of incremental efficiency improvements, these are more likely to take place as part of routine maintenance programs or replacement program, which can be stimulated through financial incentives.

### **3.3.2 Facilitation of Greater RD&D**

The adoption of more efficient technologies is a critical component and is essential if Australia is to improve its energy efficiency and economic competitiveness, and its greenhouse signature in the long-term. Governments must pursue measures that improve the take up of RD&D and its commercialisation as a means to improve energy-efficiency and encourage innovation. Greater investment in RD&D is also required by industry to identify and address the technological changes required by industry to adapt to climate change. Stimulating Australian born innovation will benefit the Australian economy through both domestic gains and through the development of export markets.

Further information in relation to RD&D can be found at Chapter (4) *Promoting Innovation: Research, Development & Demonstration*.

### **3.3.3 Attitudinal/Cultural Change**

The experience of some industries is that those achieving the largest abatement, reduction in overall energy costs and commitment to continuous improvement are generally those that have an energy efficiency culture that is entrenched within management practices and day-to-day operations.

As a matter of importance, cultural shifts are required to transform a cost mentality currently associated with energy efficiency and greenhouse abatement to one of total business cost savings.

Initiatives that have the potential to develop a new level of awareness, and initiatives which industry is prepared to support and adopt given the right incentives include:

- Pitching education campaigns at senior management (addressing the key drivers outlined above) so that cultural change is allowed to develop;
- Help market players recognise their best interest and act on it (i.e. provide consumers with better information and expertise to make more informed energy efficient purchases and behavioural choices);
- Promote long-term change in the way energy costs are viewed. That is, energy efficiency can reduce total business costs, regardless of the impact on unit costs of energy;
- Supply chain effect, including companies influencing the supply chain through specification of inputs from companies with strong 'abatement' credentials;
- Companies driving their customers to apply the product more efficiently;
- Increased focus on Product Stewardship;
- Provide better information, standards, procurement practices, and incentives to significantly increase energy efficiency in buildings and appliances;
- Education of employees and the community. Industry would consider that government has a key role to play in disseminating 'neutral', effective and strategic information to the industrial, commercial and residential sectors;
- Government leadership through the setting of a 5 star Building Greenhouse Rating Scheme for government base buildings and tenancies;
- Increased industry adoption of greenhouse performance measures in building ratings; and
- Governments taking the lead by incorporating energy efficiency principles into their procurement, operational and investment practices.

### **3.3.4 Regulatory Mechanisms**

## National Energy Market Reform

Although micro-economic reform has in part been successful, the continued reform of the National Energy Market (NEM) is essential if resource allocation is to improve and reductions in greenhouse gas emissions are to occur. The ongoing NEM reform process should also aim to:

- Encourage technological innovation that focuses on energy efficiency;
- Encourage all energy supply technologies to compete on a level playing field;
- Facilitate energy efficiency and sustainable generation projects;
- Facilitate programs that encourage synergies between water and energy demand management; and
- Improve the energy efficiency of residential housing stock.

Industry considers it important for governments to continue to identify and address any market, structural, legislative or regulatory impediments to energy production, distribution and energy efficiency.

Specific end-use energy efficiency impediments (NEM related) that need to be addressed include the lack of market emphasis on end-use energy efficiency caused by the rate of return, lack of information, access to cost-effective capital and split incentives.

Governments in response should consider:

- Interval metering;
- The introduction of full retail contestability for electricity and gas with time-of-use and location cost-reflective pricing;
- Provisions that encourage energy providers to consider and implement energy efficiency;
- Provisions that ensure that price signals are passed through to end users;
- Providing mechanisms such as Standard Offer contracts (standing bids) and an electronic trading platform as mechanisms for bidding demand management savings into the NEM;
- Promotion of effective delivery mechanisms such as Energy Performance Contracting;
- NEM reforms that encourage competition and innovation to stimulate increased productivity, lower total energy costs and greater choice;
- Facilitating the participation of specialist aggregators in the market; and
- Redressing National Electricity Code impediments to the connection of distributed generators.

The premise that market mechanisms need to be employed to the full extent possible to encourage energy efficiency has considerable merit if market failures can be successfully addressed.

### **Emissions Disclosure and Energy Labelling**

Energy labelling involves disclosing information directly to consumers in a standardised form. This may entail disclosing greenhouse gas emissions and/or fuel mix information (energy efficiency) directly on consumer bills and on products such as white goods and appliances. By providing consumers with information that they could not otherwise easily access, energy labelling would give consumers more power to make choices in the energy markets by making them aware of the greenhouse impact of their energy purchasing decisions. This process should also be extended to technologies and plant and equipment. Industry considers that there is a role for the Commonwealth in facilitating and managing this process.

### **Benchmarking Abatement**

Energy 'payback' times could be adopted as a measure to assess and benchmark the relative energy efficiency of products. For example, an average fridge might cost \$1000 and an efficient one \$1100 (generally there is little difference in price). \$100 would be recovered in energy savings in say 2 or 3 years, and for the next 15 years or so, there is a clear cost-benefit as well as a continuing greenhouse benefit.

Benchmarking returns from investing in specific energy efficiency projects, or 'Project Cost Effectiveness', requires clearly defined financial criteria to enable the effective assessment and comparisons of various energy efficiency options. One method used by various governments is the Internal Rate of Return of a specific project. An Internal Rate of Return of greater than 20%, or 15% when savings are guaranteed is a suggested benchmark.

### **Expansion of MEPS**

Minimum Energy Performance Standards have been introduced for a range of appliances, plant and equipment and have been successful in improving their efficiency. As a broad statement, industry supports a mix of mandatory programs to achieve minimum performance standards where feasible. When combined with financial incentives such as R&D incentives and appreciated depreciation, MEPS can become a useful instrument in enhancing performance above minimum requirements. Industry welcomes the broad stakeholder consultation from government agencies when reviewing the feasibility of implementing MEPS.

While MEPS programs have been shown to achieve a reduction in load demand, produce cost savings and abate greenhouse emissions, the existing RIS process is considered an essential element in assessing all new MEPS in order to ensure that the potential benefits and negative impacts are articulated and clearly understood. Industry sees merit in an expansion of the MEPS scheme to include other products unless a RIS indicates otherwise. When completing the RIS, governments must give careful consideration to whether the standard is obtainable given current technological standards and market conditions; whether the standard will introduce a compliance cost that will impede the competitiveness of domestic industries; and whether the implementation of a standard will induce manufacturers of products of poor energy efficiency to radically improve their product.

### **Mandated Minimum Efficiency Standards for all new and refurbished Buildings**

Industry recommends the introduction of nationally consistent legislation in all jurisdictions that sets minimum energy performance standards for all new and refurbishment projects. Readily updated standards for in-building energy use should be developed covering heating, ventilation and air-conditioning, insulation and lighting. Industry believes the aim should be to achieve national consensus and avoid State and Territory variations and additions.

Given the high priority placed on reducing emissions from the built environment, it is essential that the Australian Building Codes Board continues to move quickly to implement minimum energy standards that will ensure an improvement in the energy and greenhouse performance of new buildings (including both base buildings and fitouts). This approach should be based on a full-life cycle costings to improve building performance.

### **3.3.5 Government Financial Support**

As well as supporting the introduction of fiscal incentives and measures that encourage capital investment, retrofits, refurbishments and greater capital cost recovery generally, industry supports the implementation of a number of complementary measures that would aim to stimulate the accelerated uptake of end-user energy efficiency in the broader end-use operating environment. Industry suggests that additional funding programs should be established that specifically address and encourage the priority areas outlined in this section.

#### **The Transition to more efficient practices**

Measures are needed to induce the much-needed cultural change of moving from least cost procurement practices by all sectors to minimising total energy costs over the life of an asset.

To facilitate these changes and the transition to regulatory requirements, a range of government funded financial incentives are recommended. For example, improving minimum efficiency standards in new buildings comes at a cost. Those involved in the construction supply-chain will incur additional costs as they commence the process of altering traditional practices to meet the new standards.

Adoption of the UK system, which provides financial incentives for approved products and services, is strongly recommended. Financial incentives aimed at suppliers and manufacturers of energy efficiency products and services maximise the leverage of these incentives by reducing costs of these products and services to end users and by stimulating economies of scale.

Greater energy and greenhouse performance of new and existing building can be encouraged through financial incentives such as tax credits and accelerated depreciation allowances. These financial incentives are particularly suited to achieving improvements in the current building stock (i.e retrofitting the existing building stock).

#### **Industry Capacity and Capability (Training)**

Without professionals and trades people competent to install energy efficiency solutions, diagnose energy waste, design and analyse efficient energy flows, and assess products that are suited to solving energy inefficiency problems, it is likely that effective outcomes will not be delivered. Industry fully supports an increase in government expenditure to establish more government-industry training packages. Targeted programs introduced

by industry associations have the capacity to quickly and cost effectively address immediate concerns.

In developing any tools/guides to assist these parties the principles of performance-based outcomes, simplicity and practicality need to be applied.

Professional development programs should encompass a range of activities from key education and awareness programs which support the implementation of changed practices through to more discretionary activities to assist in transformation processes in the professions and training institutions.

The training of 'design and construction' practitioners as well as the training of 'building service' contactors in universities and colleges needs reviewing. At the present time, each institution is undertaking its own process. Industry considers that there is a role for the Commonwealth in assisting the coordination across institutions thereby eradicating duplication of effort.

### **3.4 NATIONAL ENERGY EFFICIENCY FRAMEWORK REQUIRED**

Some energy efficiency programs such as the National Appliance and Equipment Energy Efficiency Programme are truly national and appear to be well co-ordinated. On the other hand, a number of domestic programs (for example, the solar hot water program) have little or no formal co-ordination across jurisdictions.

The industry view is that the majority of energy efficiency programs have been created on an ad hoc basis in response to jurisdictional demands, and as a result, they do not maximise the existing opportunities for energy efficiency achievements or for the use of existing resources. Further, a lack of nationally integrated programs creates considerable additional costs for industry due to the different rules and regulations that exist across jurisdictions.

Further, this silo approach does not encourage partnerships between jurisdictions. The creation of a National Energy Efficiency Framework (NEEF) would be a means by which a national, integrated approach to energy efficiency could be implemented. The NEEF should be set up under the CoAG co-ordination arrangements applying to the energy sector as well as to greenhouse matters. The Ministerial Council on Energy should be responsible for implementation of the NEEF. The NEEF would be expected to cover issues such as:

- Energy efficiency benchmarking;
- The provision and implementation of impartial, effective and strategic energy efficiency information and activities aimed at changing energy-consumer behaviour;
- Market based mechanisms to achieve energy efficiency improvements (such as demand-side management programs in the national electricity market);
- Energy efficiency innovation;
- Application of energy efficiency principles through other sectoral policies and programs such as water policy; and
- Facilitating energy efficiency and sustainable generation demonstration projects.

The NEEF would also be an appropriate vehicle through which to address the unfulfilled commitments under the National Greenhouse Strategy.

The Framework would become the means by which these principal issues are co-ordinated and developed across Federal, State and Territory Agencies with responsibility for energy efficiency.

Of particular priority is the need to address barriers to demand management. Energy efficiency options must be able to compete with supply side options on a level playing field. This will not only facilitate environmental outcomes (greenhouse abatement) at least cost; it will also achieve least cost solutions to the provision of energy throughout Australia.

For example, the Electricity Supply Association of Australia (ESAA) has projected a need for a \$30b investment in new generating infrastructure to meet demand between 2000 and 2010. The ESAA has also estimated that energy efficiency projects could avoid \$10b of this infrastructure investment by 2010. Such a program will also produce savings for end-users of over \$3b per year, increase Australia's international competitiveness and provide greenhouse abatement, and reduce the need for future unit cost increases to pay for infrastructure investments.

## **EXTRACT FROM ENERGY AND RESOURCES REPORT**

### **ELECTRICITY**

### **ATTACHMENT 8**

#### **Government Position**

Australia will continue to develop domestic programs to meet the net 108% target and to reduce Australia's greenhouse gas emissions beyond the first commitment period.

The target must be approached in the context of a longer-term strategy.

Australia will maintain a strong and internationally competitive economy with a lower emissions signature.

Domestic policy settings will balance flexibility to adapt to an evolving future and reduced uncertainty to assist decision-making on investment.

#### **Relationship to Existing Policy**

The CoAG (Communiqué, Melbourne, 8 June 2001) has agreed that:

- the energy sector, both stationary and transport, provides an essential underpinning of Australia's economic, environmental and social goals;
- competitively priced and reliable energy services are a key to our international industry competitiveness and standard of living;
- production and export of energy commodities, technologies and services also contribute significantly to Australia's national wealth and job creation;
- Australia is well endowed with fossil and some forms of renewable energy resources; and
- Australia can expect to remain substantially reliant on its fossil fuel supplies for energy needs for the foreseeable future.

CoAG has agreed the following energy policy objectives:

- encouraging efficient provision of reliable, competitively priced energy services, underpinning wealth and job creation and improved quality of life, taking into account the needs of regional, rural and remote communities;
- encouraging responsible development of Australia's energy resources, technology and expertise, their efficient use by industries and households and their exploitation in export markets;
- there should be a focus on the wider penetration and uptake of natural gas; and
- mitigating local and global environmental impacts, notably greenhouse impacts of energy production, transformation, supply and use.

Consistent with these objectives, CoAG has agreed that all Australian government energy policies will:

- recognise the importance of competitive and sustainable energy markets;
- continuously improve energy markets between jurisdictions and between energy sources and supply and demand-side opportunities;
- enhance security and reliability of supply;
- stimulate sustained energy efficiency improvements across production, conversion, transmission, distribution and use;
- encourage efficient economic development and increased application of less carbon-intensive energy sources and technologies (including renewable energy) and support exploration of opportunities for appropriate inter-fuel substitution; and
- seek through energy markets to enhance Australia's international trading competitiveness.

In addition, the Commonwealth Government has initiated a number of measures through its *Safeguarding the Future* policy to:

- encourage the development of the renewable energy industry;
- promote the export of renewable energy products and services; and
- reduce greenhouse gas emissions in the longer term.

Micro-economic reform in Australia along with technological development has improved the ability of all main fuels (including renewable forms of energy) to contribute to generation, while network service improvements have increased the cost efficiency of delivery of power. The expectation in the 1990s when the reform process began that national average electricity prices for firms and residential customers would be reduced (in real terms) has been realised. The belief that reform would also deliver lower greenhouse gas emissions has not been realised because of the substantial increase in demand (mainly from business), the greater market share of coal-fired power in a competitive market and some shift in market share from black to brown coal generation.

One of the intended results of micro-economic reform was that electricity be treated as an undifferentiated commodity traded on a wholesale basis in the national electricity market. In practice, however, because of electricity's "essential service" features and its environmental impacts, governments continue to use power supply as a means to achieve social, economic and environmental outcomes. As identified in the CoAG energy market review, one of the major problems that has emerged in the past decade is the tendency of governments to pursue these outcomes in an ad hoc, unco-ordinated manner, leading to inconsistency, substantial over-regulation and perceptions by investors of increased risk.

As a result, the electricity supply sector is subject to a range of greenhouse and other measures which impact on its operations. Measures include:

- ***voluntary measures*** such as:
  - Greenhouse Challenge (while not specific to electricity supply, nearly all electricity supply businesses are signatories)
  - Generation Efficiency Standards
  - GreenPower schemes;
  - The Renewable Energy Action Agenda (mostly focusing on, but not specific to, electricity supply)
- ***regulated measures*** such as:
  - Mandatory Renewable Energy Targets (MRET), now under review
  - NSW Electricity Retailer Greenhouse Benchmark Scheme
  - Queensland 13 percent Gas Scheme; and
- ***fiscal measures***, including for RD and D and industry support:
  - Renewable Energy Showcase (completed)
  - Renewable Energy Commercialisation Program (completed)
  - Renewable Energy Industry Development Program (substantially completed)
  - Renewable Remote Power Generation Program
  - Photovoltaic Rebate Program (effectively completed)
  - State based Solar Water Heater Rebate Scheme
  - The Diesel Fuel Rebate Scheme
  - Cooperative research funding for brown coal and, black coal
  - Cooperative research funding for geo-sequestration
  - Cooperative research funding for renewables (not renewed after June 2003)
  - Greenhouse Gas Abatement Program (not specific to electricity supply)
  - Renewable Energy Equity Fund (not specific to electricity supply) and
  - The CSIRO Energy Flagship and related programs.

## Electricity Consumption and Greenhouse Gas Emissions

Projections about electricity production and consumption vary substantially due to assumptions about economic growth, energy intensity levels and potential outcomes of energy efficiency programs as well as differences in economic models:

- in 2000, as reported by ABARE, electricity production was 211 terawatt hours (TWh) and final consumption was 181 TWh (72 percent of which was consumed by business);
- consumption projections out to 2010 range between 225 TWh to 252 TWh and for 2020 from 250 TWh to 330 TWh; and
- electricity production is projected in a range from 252 TWh to 305 TWh by 2010 and from 292 TWh to 444 TWh by 2020.

A priority for the Commonwealth Government should be to commission and publish a set of demand and supply scenarios it accepts as the basis for policy.

Whatever the actual volume of electricity generation and consumption over this decade and the next, it is generally accepted by industry and by the Federal Government that there is a need for substantial investment in new power generation and delivery infrastructure over 20 years – and that this will not be delivered efficiently unless there is a stable, positive investment climate.

It follows from the variations in production and consumption projections that there is also a range of projections for greenhouse gas emissions from electricity supply. In 2000 greenhouse gas emissions from electricity generation totalled 175 million tonnes of CO<sub>2e</sub>, an increase of 36 percent from the 1990 level, amounting to 32 percent of Australia's total emissions. Modelling undertaken for government, industry and environmental bodies project that electricity-based emissions in 2010 will range from 185 Mt to 215 Mt and in 2020 from 199 Mt to 268 Mt (including the impact of current greenhouse response measure). Given that most electricity produced in 2010 will be from existing generation resources, it is reasonable to suggest that emissions then will exceed 1990 levels from 43 percent to 67 percent. Projections for emissions in 2020 will be significantly higher without the impact of technological and policy change.

In addition to variations in projections of the absolute level of emissions, there are also a wide variety of forecasts of emission intensity of electricity generation. Since 1990, ABARE data shows the emissions intensity of electricity generation has remained approximately static, moving from 845 kg/MWh in 1989-90 to 851 in 2000-01. In 2000 the emission intensity of electricity generation was 844 tCO<sub>2e</sub>/GWh. Projections for 2010 range from 690 to 767 tCO<sub>2e</sub>/GWh and for 2020 from 597 to 700 tCO<sub>2e</sub>/GWh. As with absolute levels of emissions, given the potential for technological and policy change, forecasts for 2020 can only be speculative. The extent of variation in these estimates has important ramifications for government greenhouse policy with respect to the sector.

Meeting growth in demand for electricity will be a function of increasing supply capacity and of improvements in demand side (end use) efficiency.

From a supply capacity viewpoint, the projected need for additional electricity generation in 2010, compared to 2000, could be satisfied by a combination of the following:

- coal-fired generation from increasing existing plant output or installing additional base-load generation;
- gas-fired generation in response to market needs and government programs such as the Queensland 13% gas scheme, electricity-related component of GGAP, and NSW retail greenhouse benchmarks;
- renewable energy generation in response to MRET, GreenPower and other initiatives; and
- improved supply-side efficiency of existing plant.

Greenhouse gas abatement costs within the electricity supply sector can vary significantly. The cost of abatement reflects the capital-intensive nature of the electricity supply industry and input fuel prices. There is contention between industry sectors about the level of these costs and whether pass through of such costs would have a significant impact on some firms and sectors in the traded goods area. Industry, governments and consultants have undertaken modelling of price and cost implications of policy options. There is a wide degree of variability of results consistent with a wide range of assumptions about cost of supply (including internalisation of externalities) and emissions abatement opportunities.

There is also little agreement between parties as to the validity or otherwise of various estimates. In particular, in making comparisons it is essential to make sure consistency is established for key assumptions. Consistency is not only a matter of having common assumptions and methodologies but also of addressing similar objectives, e.g. a program directed solely at emission abatement cannot be directly compared with one that has multiple objectives such as emission abatement and industry development (of which the MRET scheme and the Queensland Gas Scheme are two examples).

There is a wide range of views about the cost of emissions abatement for electricity supply and the consequent impact on electricity costs and prices. These impacts have been modelled to range from as little as \$1/MWh to more than \$20/MWh. A priority for the Commonwealth Government should be the commissioning of work, consistent with the above-requested electricity demand scenario, so as to provide a basis for sound policy.

Effective Federal Government policymaking requires recourse to genuinely independent, rigorous and transparent estimate of costs and benefits of the alternative approach(es).

The Working Group notes the CoAG Energy Market Review recommendation that:

“a cross sectoral greenhouse emissions trading system should be introduced to reduce greenhouse gas emissions in the electricity and gas sectors” and

“energy intensive users in the traded goods sector are to be excluded from the scheme ... until Australia’s international competitors introduce similar schemes. Excluded entities are required to meet world’s best practice in relation to their energy use.”

The Working Group did not attempt to reach a definitive conclusion on the potential value, costs and benefits of emissions trading instruments and regulated measures, such as the Mandated Renewable Energy Targets measure and the NSW Greenhouse Benchmark Scheme.

Views on emissions trading differ sharply across the business sector, including the energy supply sector, and the Working Group is not able to provide a consensus opinion.

### **Possible Approach – Context**

Domestic policy responses to reduce greenhouse gas emissions in the electricity supply sector need to consider the costs and benefits of the following six strategies:

1. development of new and emerging supply technologies, including renewable technologies, that produce lower or no greenhouse gas emissions;
2. fuel switching to lower emission fossil fuels and renewables;
3. improvements in efficiency of existing generation, networks, supply and metering;
4. more wide spread deployment of proven, lower emission fossil fuels technology;
5. demand-side (end-use) efficiency improvements; and
6. carbon capture and disposal.

The Working Group judges it is unlikely that any one strategy can deliver emission abatement and economic competitiveness goals, and policy may need to embrace all of them. The overall impact of the mix of such strategies on whole-of-government policies will need to be carefully assessed. The impact on such strategies of the broad-based fiscal incentives and attitudinal change approaches being considered by the Cross-Sectoral Working Group is a critical issue. For example:

- while action to achieve end use efficiency needs to be carried out to a large extent outside the electricity supply sector, the actual emission reductions flowing from such programs will be reflected in the electricity supply sector through lower demand intensity; and
- successful implementation of the adoption of some of the above-mentioned strategies needs to recognise the high capital intensity and long asset lives of the electricity generation sector, the costs/benefits of the strategies, and the risks inherent in successful transition from research, through development and demonstration to commercialisation.

Delivery of abatement by the electricity sector through such approaches will be significantly affected by the suite of broad based measures, including fiscal incentives, selected by the Federal Government.

The *issues for consideration* related to delivery of the above six strategies are discussed in the following tables.

**Issues for Consideration**

**STRATEGY 1 – NEW AND EMERGING SUPPLY TECHNOLOGIES**

Measure	Possible Policy Response	Costs/Benefits	Impacts
<p>Create an environment for the development of new generation and supply technologies that deliver energy services that meet the economic social and environmental needs of Australians</p>	<p>Fiscal and other incentives for the creation of a national research, development and demonstration program to identify and develop new generation technologies.</p> <p>Fiscal and other incentives to encourage the more rapid and widespread domestic market adoption of new (lower emission and renewable) technologies that have reached or are approaching the commercial stage.</p> <p>Consider measures that allow the National Electricity Code to reflect greenhouse policy responses.</p>	<p><u>Benefits:</u> Benefits include</p> <ul style="list-style-type: none"> <li>▪ significant long term reduction in carbon intensity;</li> <li>▪ the export potential of new technologies;</li> <li>▪ the potential to avoid Australian (energy) innovative capacity migrating overseas and the consequent economic impacts.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ the budgetary impact of incentives;</li> <li>▪ unless fiscal incentives are appropriate there may be a loss of international competitiveness for some industries due to the likely higher generation costs (and consequent higher consumer prices) of new technologies.</li> </ul>	<p>Th arr the pla</p> <p>Th tak po</p>

Measure	Possible Policy Response	Costs/Benefits	Im
Invest in advanced fossil fuel and renewable generation, carbon capture, treatment and disposal RD&D and commercialization programs.	<p>Fiscal and other incentives for investment by government agencies and industry in RD&amp;D and commercialization relating to:</p> <ul style="list-style-type: none"> <li>▪ advanced fossil fuel technologies;</li> <li>▪ carbon capture and disposal; and</li> <li>▪ renewable energy.</li> </ul> <p>Fiscal incentives to encourage the uptake of new technologies. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions;</li> <li>▪ subsidies;</li> <li>▪ mandating market share.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ the ultimate prospect of continued coal and natural gas use with reduced emissions;</li> <li>▪ the ultimate prospect of widespread uptake of large scale renewables;</li> <li>▪ the export potential of new technologies.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ cost of fiscal incentives;</li> <li>▪ generation costs will be higher unless RD&amp;D and commercialisation programs reduce costs significantly.</li> </ul>	La ter pro co un  La cu
Promote market uptake of distributed generation that results in lower emission intensity energy production.	<p>Fiscal incentives for investment in research commercialization.</p> <p>Remove regulatory impediments.</p> <p>Fiscal incentives to encourage the uptake of new technologies. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions;</li> <li>▪ subsidies;</li> <li>▪ nationally mandating market shares.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ embedded generation reduces network losses and provides other supply benefits;</li> <li>▪ gas and renewables-based embedded generation technologies significantly reduce greenhouse gas emissions.</li> </ul> <p><u>Costs:</u> Costs include costs of:</p> <ul style="list-style-type: none"> <li>▪ fiscal incentives.</li> <li>▪ mandated market shares.</li> </ul>	Cu  La  Un ab dis alt au

## STRATEGY 2 – FUEL SWITCHING

Measure	Possible Policy Response	Costs/Benefits	Im
<p><b>Natural Gas:</b> Promote commercial best-practice gas-based generation and in particular cogeneration (combined heat and power or combined cycle generation).</p>	<p>Removal of impediments to investment in gas exploration, extraction and transportation investment.</p> <p>Remove regulatory impediments.</p> <p>Negotiated agreements similar to Generation Efficiency Standards agreements.</p> <p>Fiscal incentives to encourage the uptake of these natural gas fuelled technologies. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions;</li> <li>▪ subsidies;</li> </ul> <p>Nationally mandated market shares</p>	<p>Benefits: benefits include:</p> <ul style="list-style-type: none"> <li>▪ potentially lower greenhouse gas emissions;</li> <li>▪ efficiency gains in end use sector (eg via development of combined heat and power options);</li> <li>▪ a national scheme can be more cost effective than individual state schemes.</li> </ul> <p>Costs: Costs include:</p> <ul style="list-style-type: none"> <li>▪ mandated measures can be costly and cause investment distortions;</li> <li>▪ costs of fiscal incentives;</li> <li>▪ the impact of any consequent increase in prices on competitiveness of Australian industry.</li> </ul>	<p>Th rec of Ac he be Th Un dis ea</p>

Measure	Possible Policy Response	Costs/Benefits	Im
<p><b>Renewable Energy:</b> Develop and promote the renewable energy industry (including wind, solar PV and thermal, hydro and biomass).</p>	<p>Remove regulatory impediments.</p> <p>Fiscal and other incentives to encourage the uptake of new technologies and build relevant domestic manufacturing capacity. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions;</li> <li>▪ subsidies;</li> <li>▪ funding for pilot and demonstration plants.</li> </ul> <p>Nationally mandated market share.</p> <p>In relation to fiscal and other incentives and nationally mandated market shares, policies that need to be considered include:</p> <ul style="list-style-type: none"> <li>▪ expansion and extension of MRET;</li> <li>▪ tax deductibility for green power premium paid voluntarily by customers and investments in PV and solar hot water heaters;</li> <li>▪ other incentives to encourage the adoption of PV and solar hot water technology;</li> <li>▪ industry development programs to build capability and capacity;</li> <li>▪ mandated minimum energy performance schemes.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ the potential for lower greenhouse emissions;</li> <li>▪ the development of new industries in Australia;</li> <li>▪ the potential to export technologies and services;</li> <li>▪ renewables may also provide a critical source of energy to produce hydrogen for a future hydrogen economy.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ cost of fiscal measures;</li> <li>▪ the impact of any consequent increase in prices on competitiveness of Australian industry.</li> <li>▪ mandated measures may be costly and cause investment distortions;</li> <li>▪ these technologies are not yet competitive with conventional fossil fuel if the costs of externalities are excluded. However, costs are reducing as industry capacity and capability improves.</li> </ul>	<p>Th rec of  Un pro inc pic  Th fro tec fro  Un sta fra</p>

Measure	Possible Policy Response	Costs/Benefits	Im
<p><b>Coal:</b> Develop and promote advanced coal based generation technologies (including supercritical, ultra super critical, PFBC and IGCC):</p> <ul style="list-style-type: none"> <li>▪ for example, IGCC offers a potential zero emission pathway for the future when linked with CO<sub>2</sub> capture and disposal.</li> </ul>	<p>Development and implementation of a national clean coal strategy.</p> <p>Fiscal and other incentives to encourage the uptake of new technologies. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions;</li> <li>▪ subsidies;</li> <li>▪ funding for pilot and demonstration plants.</li> </ul> <p>A national mandated market share scheme for new technologies (in the long term).</p>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ advanced coal generation offers significantly reduced greenhouse emissions compared to conventional coal plants for base load generation;</li> <li>▪ coal gasification may also be a critical source of hydrogen for any future hydrogen economy.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ mandated measures can be costly and cause investment distortions;</li> <li>▪ cost of fiscal incentives;</li> <li>▪ these technologies are not yet competitive with conventional coal fuelled electricity. However, costs are coming down;</li> <li>▪ the impact on international competitiveness of any consequent price rises for electricity if costs do not drop sufficiently.</li> </ul>	<p>La lin alt ap  La ch wh La ini pro  La str ga dis hy</p>

**STRATEGY 3 – IMPROVEMENTS IN EFFICIENCY OF EXISTING INFRASTRUCTURE**

<i>MEASURE</i>	<b>Possible Policy Response</b>	<b>Costs/Benefits</b>	<b>Im</b>
<p>Adopt world best-practice (but commercially feasible) generation, transmission, distribution, supply and metering technologies.</p>	<p>Regulatory approaches such as:</p> <ul style="list-style-type: none"> <li>▪ negotiated agreements for Generation Efficiency Standards.</li> <li>▪ transformer Minimum Energy Performance Standards;</li> <li>▪ network and metering standards.</li> </ul> <p>Fiscal incentives to encourage the uptake of best practice approaches. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions; and</li> <li>▪ subsidies.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ reduction in greenhouse emissions;</li> <li>▪ potential development of new industries and export opportunities.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ higher prices to consumers with potential loss of international competitiveness;</li> <li>▪ capital outlays for generators;</li> <li>▪ fiscal costs of incentives and sub optimal regulation.</li> </ul>	<p>Ma rec Un dis ea M co pa thr</p>
<p>Invest in technologies to upgrade efficiency for both thermal and renewable plant.</p>	<p>Regulatory approaches such as negotiated agreements for Generation Efficiency Standards.</p> <p>Fiscal incentives to encourage the uptake of new technologies. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions; and</li> <li>▪ subsidies.</li> </ul> <p>National greenhouse abatement scheme that consolidates &amp; expands current state based schemes.</p>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ reduction in greenhouse emissions;</li> <li>▪ lower operating costs;</li> <li>▪ enhanced industry development opportunities.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ capital outlays for generators;</li> <li>▪ fiscal costs of incentives and sub optimal regulation.</li> </ul>	<p>Ma rec Un dis ea</p>

<i>MEASURE</i>	<b>Possible Policy Response</b>	<b>Costs/Benefits</b>	<b>Im</b>
Invest in advanced network augmentation technologies.	Fiscal incentives to encourage the uptake cost effective network improvements and accommodation of embedded generation. Options include: <ul style="list-style-type: none"> <li>▪ taxation concessions; and</li> <li>▪ subsidies.</li> </ul>	<p><u>Benefits:</u> Benefits include reductions in losses from system.</p> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ capital outlays for generators;</li> <li>▪ fiscal costs of incentives and sub optimal regulation.</li> </ul>	Re thr  Un dis ea
Adopt interval metering and location pricing.	Government and regulatory commitment to cost effective time of use and location pricing	<p><u>Benefits:</u> Potential for reduced energy use, line losses and greenhouse gas emissions.</p> <p><u>Costs:</u> Cost include:</p> <ul style="list-style-type: none"> <li>▪ costs of installing interval meters;</li> <li>▪ associated IT and billing system costs.</li> </ul>	La reg us

**STRATEGY 4 – DEPLOYMENT OF PROVEN LOWER EMISSION FOSSIL FUEL TECHNOLOGIES**

<b>Measure</b>	<b>Possible Policy Response</b>	<b>Costs/Benefits</b>	<b>Im</b>
See appropriate measures in strategies 1,2,3 above.			

**STRATEGY 5 - DEMAND-SIDE ENERGY EFFICIENCY IMPROVEMENTS.**

Measure	Possible Policy Response	Costs/Benefits	Im
Facilitate effective use of demand side participation	<p>Adopt more flexible demand bidding approaches into power pools.</p> <p>Provide more effective price signals to end use customers eg:</p> <ul style="list-style-type: none"> <li>▪ by adopting cost effective interval metering for time-of-use and location pricing.</li> <li>▪ By regulatory approaches to implement time of use and location pricing.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ reduction in electricity prices;</li> <li>▪ reduction in energy use;</li> <li>▪ improved asset utilization;</li> <li>▪ potential reductions in greenhouse emissions.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ implementation costs and transaction costs may be high but could be minimised through large scale roll out;</li> <li>▪ cost of installation of IT support systems.</li> </ul>	La de .
Facilitate industrial/commercial energy efficiency.	<p>Regulatory approaches such as:</p> <ul style="list-style-type: none"> <li>▪ minimum energy performance standards for equipment;</li> <li>▪ minimum energy performance standards for non-residential buildings.</li> </ul> <p>Negotiated agreements to reduce energy consumption.</p> <p>Expand existing “best practice” energy efficiency programs.</p> <p>Government leadership through minimum five star building tenancy requirements.</p>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ lower energy costs and improved international competitiveness;</li> <li>▪ development of new industries;</li> <li>▪ lower greenhouse emissions</li> <li>▪ uncertainty of abatement under voluntary agreements.</li> </ul>	Up high ret eff ter  Ma inf an  Un dis ea

Measure	Policy Response	Costs/Benefits	Im
Facilitate industrial/commercial energy efficiency (cont)	<p>Fiscal incentives to encourage investment in more efficient plant and equipment and buildings. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions; and</li> <li>▪ subsidies.</li> </ul> <p>In relation to fiscal incentives possible options include:</p> <ul style="list-style-type: none"> <li>▪ more effective price signals to end use customers.</li> <li>▪ industry development programs to build industry capability and capacity including delivery mechanisms such as energy performance contracting.</li> </ul> <p>National greenhouse abatement scheme that consolidates and expands current state based schemes.</p> <p>Rejoining the IEA and CADDET Programs to enable the effective dissemination and access to overseas developments and innovations.</p>	<p>Costs: Costs include:</p> <ul style="list-style-type: none"> <li>▪ costs to industry for new equipment;</li> <li>▪ cost of fiscal incentives;</li> <li>▪ loss of efficiency if regulatory approaches are inappropriate</li> </ul>	

Measure	Policy response	Costs/Benefits	Impacts
<p>Improve the energy efficiency for households</p>	<p>Regulatory approaches covering:</p> <ul style="list-style-type: none"> <li>▪ minimum energy performance standards for new homes and renovations;</li> <li>▪ minimum energy performance standards for appliances and equipment.</li> </ul> <p>Changes to market pricing arrangements.</p> <p>Fiscal incentives to encourage investment in more efficient appliances and homes. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions for energy efficient appliances; and</li> <li>▪ subsidies/rebates.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ lower energy costs and improved living standards;</li> <li>▪ development of new industries;</li> <li>▪ lower greenhouse emissions.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ costs to households for new equipment;</li> <li>▪ cost of fiscal incentives;</li> <li>▪ loss of efficiency if regulatory approaches are inappropriate.</li> </ul>	<p>Up hi Ma inf an</p>
<p>Expand the use of solar and gas space and water heating and heat pumps.</p>	<p>Regulatory approaches for new buildings.</p> <p>Fiscal incentives to encourage investment in new appliances and plant. Options include:</p> <ul style="list-style-type: none"> <li>▪ taxation concessions; and</li> <li>▪ subsidies/rebates.</li> </ul>	<p><u>Benefits:</u> Benefits include:</p> <ul style="list-style-type: none"> <li>▪ lower energy costs and improved living standards;</li> <li>▪ development of new industries;</li> <li>▪ lower greenhouse emissions.</li> </ul> <p><u>Costs:</u> Costs include:</p> <ul style="list-style-type: none"> <li>▪ costs to households/business for new equipment;</li> <li>▪ cost of fiscal incentives;</li> <li>▪ loss of efficiency if regulatory approaches are inappropriate.</li> </ul>	<p>La so pa he an</p>

**STRATEGY 6 – CARBON CAPTURE AND DISPOSAL**

<b>Measure</b>	<b>Policy response</b>	<b>Costs/Benefits</b>	<b>Im</b>
See Attachment 5 on Sequestration	See Attachment 5 on Sequestration	See Attachment 5 on Sequestration	Se Se