Carbon Pollution Reduction Scheme

Green Paper

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Acting on Climate Change: Towards an Australian Carbon Pollution Reduction Scheme

Why we need to act

Carbon pollution is causing climate change, resulting in higher temperatures, more droughts, rising sea levels and more extreme weather.

The 12 hottest years in history have all been in the last 13 years and IPCC scenarios project temperature rises between 1 and 6.4 degrees over the next century relative to 1980–99.

Without action, scientists predict up to 20 per cent more drought months over most of Australia by 2030, more intense and damaging cyclones and rising sea levels with serious impacts on:

- coastal property in Australia
- low lying Asian mega cities
- the Pacific Islands.

With one of the hottest and driest continents on earth, Australia's economy and environment will be one of the hardest and fastest hit by climate change if we don't act now.

It threatens Australia's food production, agriculture, water supplies, as well as icons like the Great Barrier Reef, the Kakadu wetlands and the big tourism industries they support.

Today we are already beginning to feel the economic and environmental costs of inaction on climate change. But if we delay action any longer, these costs will be felt even more by not only our generation, but also our children and grandchildren.

How we should act

There is no single solution to winning the fight against climate change. But the economically responsible approach is to reduce Australia's carbon pollution while building long-term economic prosperity in a lower carbon economy.

The Government's climate change strategy is based on three pillars:

- reducing Australia's greenhouse gas emissions
- adapting to climate change that we cannot avoid
- helping to shape a global solution.

Reducing carbon pollution

Fundamental to the Government's climate change strategy is a Carbon Pollution Reduction Scheme. It is the best way to reduce carbon pollution while minimising the impact on business and households.

The Government's Carbon Pollution Reduction Scheme will, for the first time, place a limit, or cap, on the amount of carbon pollution industry can emit.

It will require affected businesses and industry to buy a 'pollution permit' for each tonne of carbon they contribute to the atmosphere, giving them a strong incentive to reduce pollution.

Because the carbon pollution reduction scheme will concentrate on the biggest polluters, it will place obligations on around 1000 Australian companies in total – those that produce more than 25000 tonnes of carbon pollution each year. This represents less than one per cent of Australian businesses – there are 7.6 million registered businesses in Australia, the vast bulk of whom will not have scheme obligations.

The Government will use every cent raised by the sale of pollution permits to help Australian households and businesses adjust to the scheme and invest in clean energy options.

Support for households and business

The Government recognises that there will be adjustment costs for Australian households arising from the Carbon Pollution Reduction Scheme.

The Government will cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the introduction of the Carbon Pollution Reduction Scheme. The Government will periodically assess the adequacy of this measure for three years and adjust this offset accordingly. At the end of the three year period the Government will review this adjustment mechanism.

The Government is also offering a range of additional assistance measures, in particular for low and middle income households, to help with adjustment costs and improve household energy efficiency.

The Government also recognises that there will be adjustment costs for businesses as they move to a low carbon economy. That is why the green paper outlines programs to assist these businesses in the transition period. This assistance involves providing free permits to the most emissions intensive trade exposed activities, some direct assistance to coal-fired electricity generators, and the creation of two specific industry adjustment funds, the Climate Change Action Fund and the Electricity Sector Adjustment Scheme.

Adapting to climate change

Climate change from carbon pollution is already underway, so we must prepare ourselves for the inevitable changes already built into the climate system. This will involve far reaching impacts on our economy, community and our environment.

The Government is working with industry, state, territory and local governments and scientists to develop the tools to enable all Australians to better prepare for the changes ahead.

Acting with the rest of the world

Climate change is a global problem requiring a global solution. That's why the first act of the new Australian Government was to ratify the Kyoto Protocol.

Australia is heavily engaged in the next phase of international negotiations. We need to proceed with well-considered domestic action if our nation is to play a constructive role in shaping a global system where all countries play their proper role.

By adopting emssions trading, Australia will join other developed nations in the fight to reduce carbon pollution. Schemes are already operating in 27 European countries. Twenty-eight states and provinces in the US and Canada are introducing emissions trading to reduce carbon pollution, as is New Zealand. Japan is considering introducing a scheme. And in the US both Presidential candidates are committed to introducing schemes to reduce carbon pollution.

These schemes are a critical part of global leadership on climate change. Leadership from the developed world encourages other countries to join the global fight.

The Government will take account of the evolving state of international negotiations in determining the path we set to meet our target of reducing Australia's carbon pollution by 60 per cent below 2000 levels by 2050.

Acting responsibly, in our nation's long-term interests

Reducing carbon pollution requires a substantial transformation of our economy. Like all significant economic reforms, it will not be easy, and it will require hard decisions. But the longer these decisions are delayed, the harder they become.

The Australian economy is well placed to respond to climate change. The Government will ensure the Carbon Pollution Reduction Scheme and accompanying household and business support is consistent with our fiscal strategy and focus on expanding the productive capacity of the economy while restraining inflation.

The Government plans to commence the scheme in 2010. We recognise the need to ensure business is ready to implement the scheme by this time and will consult with the community and business over the coming months.

We urge everyone to participate in this consultation process – all Australians have a stake in tackling climate change, for ourselves and for those who follow us.

The Hon Kevin Rudd
Prime Minister

The Hon Wayne Swan
Treasurer

Senator the Hon Penny Wong
Minister for Climate Change
and Water

Table of contents

Acting on Climate Change: Towards an Australian Carbon Pollution Reduction Scheme **iii**

Why we need to act iii

How we should act iii

Reducing carbon pollution iv

Support for households and business iv

Adapting to climate change v

Acting with the rest of the world v

Acting responsibly, in our nation's long-term interests v

Acronyms **xiv**

Green paper – summary report **1**

Addressing the climate change challenge 1

Climate change risks for Australia 2

Impact of policy responses to climate change 7

The Government's climate change strategy 8

Developing a Carbon Pollution Reduction Scheme 9

How does a cap and trade scheme work? 11

Australia's emissions profile 14

Coverage proposals including transport,forests and agriculture 15

Creating a robust carbon market 20

Emissions targets and scheme caps 21

Reporting and compliance 23

International linking 23

Assistance for households 24

Assistance for business, regions and workers 26

Emissions-intensive trade-exposed industries 27

Strongly affected industries 29

Scheme governance 31

The role of complementary measuresand transitional matters 31

Next steps: engagement in the process and final decisions 32

Making a submission 33

Summary of Preferred Positions **35**

1. Framework for the Carbon Pollution Reduction Scheme **55**

1.1 The policy context 58

1.1.1 Climate change impacts 58

1.1.2 Australia's dual vulnerability to climate change 58

1.1.3 The Government's climate change strategy 65

1.2 How a cap and trade scheme works 73
1.2.1 Essential elements of a cap and trade scheme 74
1.2.2 Comparing an emissions trading scheme to other possible policy responses 77
1.3 Managing the adjustment to a carbonconstrained economy 80
1.4 Complementary Measures 82
1.5 The objective of the scheme 84
1.6 Assessment criteria 85
1.7 Summary of the green paper 86
1.8 Next steps: engagement in the processand final decisions 87
1.9 Making a submission 88
2. Coverage 91
2.1 International accounting framework 94
2.2 Coverage of greenhouse gases 96
2.3 Approach to coverage 96
2.3.1 Points of obligation 97
2.3.2 Thresholds 98
2.4 Sector analysis 99
2.4.1 Stationary energy 99
2.4.2 Transport 99
2.4.4 Industrial processes 104
2.4.5 Waste 106
2.4.6 Carbon capture and storage 107
2.5 Fuel analysis 109
2.5.1 Liquid and gaseous fuels 109
2.5.2 Petroleum products 109
2.5.3 Liquefied natural gas and compressed natural gas 112
2.5.4 Natural gas 113
2.5.5 Coal 115
2.5.6 Biofuels and biomass 117
2.5.7 Netting-out arrangements 118
2.6 Emissions from land use 119
2.6.1 Current international accounting 119
2.6.2 Possible evolution of international accounting rules 121
2.6.3 Scheme accounting framework 122
2.7 Agriculture emissions 123
2.8 Forestry 127
2.8.1 Reforestation 127
2.8.2 Deforestation 134
2.9 Broad coverage and offsets 136
3. Carbon market 141
3.1 Market efficiency 142
3.1.1 Allocative efficiency 142

3.1.2 Efficient price discovery 143
3.1.3 Development of the market 145
3.2 Price volatility 146
3.3 The nature of a carbon pollution permit 148
3.3.1 What is a carbon pollution permit? 148
3.3.2 Characteristics of a carbon pollution permit 149
3.3.3 Holding a carbon pollution permit 150
3.3.4 Should the Australian permits be financial products? 151
3.4 Intertemporal flexibility 152
3.4.1 Banking 153
3.4.2 Borrowing 155
3.4.3 Length of compliance period 159
3.5 The price cap 161
3.5.1 Use of a price cap in the scheme 161
3.5.2 Form of the price cap 165
4. Emissions targets and scheme caps 169
4.1 Issues in trajectory setting 170
4.1.1 The medium-term target 170
4.1.2 The indicative national emissions trajectory 171
4.2 Accounting for scheme caps and the indicative national emissions trajectory 175
4.2.1 Notional allocation 175
4.3 Guidance over scheme caps 177
4.3.1 Scheme caps 177
4.3.2 Gateways 180
4.4 Adjustment of scheme caps 186
4.4.1 Adjustment in the light of international developments 186
4.4.2 Adjusting the cap for expansions in scheme coverage 187
4.5 Timing of announcements of the indicative national emissions trajectory and scheme caps 189
5. Reporting and compliance 193
5.1 The National Greenhouse and Energy Reporting System 194
5.2 Defining the liable entity 195
5.3 Monitoring, reporting and assurance 197
5.3.1 Monitoring 197
5.3.2 Reporting 206
5.3.3 Assurance 208
5.4 Surrender of eligible compliance permits and the national registry 212
5.5 Compliance and enforcement 215
5.5.1 Key obligations in the scheme 215
5.5.2 Broad approach to compliance and enforcement 215
5.5.3 Powers of the regulator 216
5.5.4 Other requirements for compliance and enforcement 216

6. Linking the scheme to international markets 219

6.1 The scheme objective and its implicationsfor linking policy 221

6.2 Types of links 223

6.3 Implications of the Kyoto Protocol for linking 224

6.4 Domestic compliance units and the Kyoto Protocol 229

6.5 Accepting international Kyoto units in the Australian scheme 230

6.5.1 Quantitative restrictions 231

6.5.2 Other considerations 234

6.5.3 Using certified emissions reductions and emissions reduction units beyond 2012–13 238

6.6 Use of non-Kyoto units for compliancein the scheme 242

6.7 Sale and transfer of domestic abatementto international markets 244

6.7.1 Hosting joint implementation projects in Australia 246

6.8 Providing clarity over linking rules 248

6.9 Future linking arrangements 250

7. Auctioning of Australian carbon pollution permits 255

7.1 Allocating carbon pollution permits 255

7.2 Advantages of auctioning as an allocation method 256

7.3 Governance arrangements 257

7.4 Considerations in auction design 259

7.4.1 Economic efficiency 259

7.4.2 Reducing implementation risk 259

7.4.3 International experience and Australian proposals for auction design 260

7.5 Auction design features 261

7.5.1 Auction frequency 261

7.5.2 Auction timing 264

7.5.3 Advance auction of future financial year vintages 265

7.5.4 Auction participation 269

7.5.5 Auction type 270

7.5.6 Operational features of the auction 273

8. Household assistance measures 277

8.1 Household assistance commitments 277

8.2 Impacts of the scheme on households 279

8.2.1 Price impacts 279

8.2.2 Impact of structural changes 279

8.2.3 Wealth impacts 280

8.3 Broad distributional price impacts 281

8.4 Energy efficiency opportunities and challenges 284

8.4.1 Market failures and energy efficiency 284

8.4.2 Assisting households reduce energy costs 286

8.5 Future development of Government commitments 288

8.5.1 Current policy environment 288

8.5.2 Potential timing for the introduction of household assistance measures 289

9. Assistance to emissions-intensive trade-exposed industries 291
9.1 Principles guiding the developmentof EITE industry assistance 292
9.1.1 Rationale for EITE industry assistance 292
9.1.2 Impact on non-assisted industries and households 295
9.1.3 Guiding principles for the development of EITE assistance policy 296
9.2 Form of assistance 298
9.2.1 Exemption 299
9.2.2 Border adjustments 300
9.2.3 Free allocation of permits 301
9.2.4 Cash payments 301
9.2.5 Summary of form of assistance 302
9.3 Identifying recipients of EITE assistance 303
9.3.1 Basis for assessing eligibility for EITE assistance 303
9.3.2 Assessing emissions intensity 306
9.3.3 Assessing trade exposure 310
9.3.4 The process for determining eligible EITE activities 311
9.3.5 Preliminary analysis of the emissions per unit of revenue of Australian industries 312
9.4 Initial size and distribution of the EITEassistance policy 315
9.4.1 How many permits should be allocated as EITE assistance? 315
9.4.2 At what level should the eligibility threshold for EITE assistance be set? 316
9.4.3 How should assistance be distributed between eligible EITE activities? 317
9.4.4 Summary assessment of the quantity and distribution of assistance across EITE entities 319
9.5 Calculating assistance for EITE activities 322
9.5.1 Overall methodology for calculating allocations 324
9.5.2 Establishing emissions-intensity and electricity-intensity baselines 325
9.5.3 Electricity factor 327
9.5.4 Measuring Output 328
9.5.5 Cessation of EITE activities 329
9.6 Assistance to EITE entities over time 331
9.6.1 Adjusting the level of allocations to EITE entities over time 331
9.6.2 Phase-out of EITE industry assistance 335
10. Strongly affected industries 341
10.1 Identifying strongly affected industries 341
10.1.1 Emissions intensity 342
10.1.2 Ability to pass on carbon costs 343
10.1.3 Significant 'sunk' capital costs 344
10.1.4 Significant economically-viable abatement opportunities 345
10.2 Possible strongly affected industries 346
10.2.1 The electricity generation industry 346
10.2.2 The waste industry 352
10.2.3 The natural gas industry 352
10.2.4 The gas supply industry 353
10.2.5 Other industries 354

10.3 Structural adjustment assistance for the coal-fired electricity generation sector 355
10.3.1 Government commitments to CCS 355
10.3.2 Workers, communities and regions 357
10.4 The rationale for direct assistance to coal-fired electricity generators 363
10.4.1 Energy security implications of assistance 364
10.4.2 Fairness considerations 367
10.4.3 The effect of assistance on the investment environment 369
10.5 The Electricity Sector Adjustment Scheme 371
10.5.1 Determining a quantum of assistance 372
10.5.2 Eligibility for assistance 375
10.5.3 Basis of allocation among recipients 378
10.5.4 A proposed simple asset-by-asset allocation method 381
10.5.5 The form of assistance 385
11. Tax and accounting issues 393
11.1 Objectives of the tax system in relation to the scheme 394
11.1.1 Cost-effectiveness 394
11.1.2 Tax neutrality 395
11.1.3 Simplicity 395
11.2 Scheme features integral to the tax treatment of permits 396
11.3 Current income tax law 397
11.3.1 Treatment of permits under the existing income tax law 397
11.4 Options for the income tax treatment of permits 400
11.4.1 Application of the current income tax law 400
11.4.2 Development of discrete legislation for the tax treatment of permits 401
11.5 Dealing with timing issues under the income tax system 402
11.5.1 Rolling balance method 403
11.5.2 Options for calculating values of permits held in the rolling balance 404
11.5.3 Effect on future-dated permits 410
11.6 Recognising direct government assistance for liable entities under the income tax system 411
11.6.1 Free permits 411
11.6.2 Cash grants 414
11.7 Income tax treatment of penalties for non-compliance 415
11.8 Goods and services tax 416
11.8.1 Preferred GST treatment of scheme transactions 416
11.8.2 The GST treatment for different types of scheme transactions 416
11.9 Accounting for emissions-related assets and liabilities 418
11.9.1 Existing accounting requirements 418
11.9.2 IASB project and the way forward 419
12. Transitional issues 421
12.1 Climate Change Action Fund 422
12.2 Transition of existing measures 424
12.2.1 Transition commitments by state and territory governments 425
12.2.2 Likely effects of the transition 425

12.3 Credit for early action 427
12.3.1 Rationale for early action 427
12.3.2 Options for early action 427
12.4 The impacts of contracts and regulation on cost pass-through 430
12.4.1 Regulatory impediments to carbon cost pass through 430
12.4.2 Contractual impediments to carbon cost pass through 430
13. Governance arrangements and implementation 433
13.1 Framework for assigning key roles 434
13.1.1 Assessment criteria 434
13.2 Allocation of responsibility for key roles 436
13.2.1 Setting national targets and the trajectory 436
13.2.2 Industry assistance 438
13.2.3 Monitoring, facilitating and enforcing compliance 439
13.3 Independent review 443
13.4 States and territories 445
13.5 The regulator 446
13.5.1 Independence 447
13.5.2 Accountability 448
13.5.3 Proposed structure of the regulator 449
13.5.4 Relationship with other regulators 449
13.6 Implementation 452
A. Comparison of emissions trading scheme design approaches 457
Part I: Proposed Australian models 458
Part II: International schemes 476
B. List of consulted parties 487
C. National registry 493
C.1 Registration 494
C.2 Transaction of permits 494
C.3 Surrender of eligible compliance permits 494
C.4 Reporting and disclosure of information 495
C.5 System linkages 496
D. Analysis of the emissions intensity of Australian industries 497
Glossary 503

Acronyms

AASB	Australian Accounting Standards Board
AAU	Assigned Amount Units
ABARE	Australian Bureau Of Agricultural And Resource Economics
ACCC	Australian Competition and Consumer Commission
ACT GGAS	Australian Capital Territory Greenhouse Gas Abatement Scheme
AEMC	Australian Energy Market Commission
ANZSIC	Australian and New Zealand Standard Industrial Classification
AOFM	Australian Office of Financial Management
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CGT	Capital Gains Tax
CISA	Centre for Integrated Sustainability Analysis
CNG	Compressed Natural Gas
CO_2	Carbon Dioxide
CO_2-e	Carbon Dioxide Equivalent
COAG	Council Of Australian Government
CSIRO	Commonwealth Scientific And Industrial Research Organisation
DSA	Demand Side Abatement
EITE	Emissions-intensive trade-exposed
ERU	Emission Reduction Unit
ESAS	Electricity Sector Adjustment Scheme
EU	European Union
EU ETS	European Union Emissions Trading Scheme
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GEDO	Greenhouse and Energy Data Officer
GST	Goods and Services Tax
GW	Gigawatt
GWh	Gigawatt-hour
HFCs	Hydrofluorocarbons
IASB	International Accounting Standards Board
IFRIC	International Financial Reporting Interpretations Committee

IFRS	International Financial Reporting Standards
IMOWA	Independent Market Operator of Western Australia
IPCC	International Panel on Climate Change
ITC	Income Tax Credits
lCER	Long-Term Certified Emission Reductions
kg	Kilograms
kW	Kilowatt
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MCE	Ministerial Council on Energy
MRET	Mandatory Renewable Energy Target
MW	Megawatt
MWh	Megawatt-hour
NAP	National Allocation Plan
NEM	National Electricity Market
NEMMCO	National Electricity Market Management Company
NETT	National Emissions Trading Taskforce
NGAC	New South Wales Greenhouse Gas Abatement Certificate
NGERS	National Greenhouse And Energy Reporting System
NSW GGAS	New South Wales Greenhouse Gas Reduction Scheme
NWI	National Water Initiative
OSCAR	Online System For Comprehensive Activity Reporting
PFCs	Perfluorocarbons
RECLAIM	Regional Clean Air Incentives Market
RGGI	Regional Greenhouse Gas Initiative
RMU	Removal Unit
tCER	Temporary Certified Emission Reductions
TGET	Task Group on Emissions Trading
TJ	Terajoules
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WEM	Wholesale Electricity Market (Western Australia)
WTO	World Trade Organization

Green paper – summary report

The green paper outlines the Australian Government's approach to the design of a national emissions trading scheme – Australia's Carbon Pollution Reduction Scheme. The paper identifies the key design decisions that are required, discusses alternative approaches to dealing with the key questions to be resolved, and indicates preferences among options.

In preparing the green paper, the Government has drawn on work undertaken by the former Government's Task Group on Emissions Trading (TGET), the states and territories' National Emissions Trading Taskforce (NETT) and the Garnaut Climate Change Review. Lessons learned from the establishment of the European Union Emissions Trading Scheme and other schemes have helped shape the approaches proposed in this green paper. Importantly, the development of options has been heavily influenced by extensive consultations with industry, community groups and other stakeholders over the past year.

Stakeholder feedback is now sought on all elements of the green paper and this feedback will inform the Government's decisions on final scheme design. The Government's intention is that a white paper incorporating those decisions and an exposure draft of legislation for Australia's Carbon Pollution Reduction Scheme will be released by the end of 2008.

Addressing the climate change challenge

Addressing climate change is one of the key economic and environmental challenges facing Australia and the rest of the world.

An effective global and domestic response to climate change is one of the highest priorities of the Australian Government. Indeed, the Government's first official act was to ratify the Kyoto Protocol, committing Australia to play its part in addressing climate change.

Climate change involves profound challenges. It has the potential to fundamentally re-shape our social, environmental and economic landscapes – particularly affecting water supply, agricultural industries, coastal zones and our natural heritage.

Climate change is a by-product of industrialisation. Environmental damage is caused by greenhouse gas emissions which are predominantly carbon-based. The emissions constitute carbon pollution yet those who generate the pollution are not held accountable for the costs they impose on us all. The resulting environmental degradation is not currently reflected in the costs of business or the price of goods and services. Because firms face no cost from increasing emissions, the level of emissions is too high. Unless businesses and individuals over time bear the responsibility for their consumption and production decisions, the level of carbon pollution will remain at unsustainable levels. Emissions trading schemes are designed to redress this market failure. Emissions trading schemes are simply a mechanism to achieve an objective. That objective is to reduce carbon pollution, and to do so efficiently, by putting a cap on emissions. The Government is therefore referring to the measure as the Carbon Pollution Reduction Scheme.

Addressing this market failure will involve significant economic reform. Tackling climate change will not be easy and there will be adjustment costs. However, this is not a choice between a no-cost option and an option with costs. It is a choice between taking responsible action now – or neglecting to act and facing much higher costs later. The Carbon Pollution Reduction Scheme is the best way to reduce emissions while continuing to build long-term economic prosperity.

Climate change risks for Australia

The Inter Governmental Panel on Climate Change (IPCC) makes an unequivocal case to begin to address climate change. This is critical for Australia, which is already one of the hottest and driest nations and more at risk than other developed countries.

The science of climate change presented in the IPCC Fourth Assessment Report in 2007 paints a clear picture. Warming of the climate system is unequivocal, as evident from a wide range of measurements. Numerous other changes have been observed in changes to wind patterns, rainfall, sea ice, ice sheets, and in aspects of extreme weather. It is very likely that greenhouse gas increases related to human activity have caused most of the rise in global mean temperature since the mid-20th century.[1]

New data and scientific understanding, unavailable in time for last year's IPCC report, are starting to paint an even more worrying picture of climate change and its future impact, if left unaddressed.

The Garnaut Review's Draft Report of June 2008 suggests that emissions are tracking at the upper bounds of the scenarios modelled by the IPCC. Recent research suggests that the rate and magnitude of climate change over the next century may be at the high end of the range estimated by the IPCC. Global mean temperature and sea-level rise are tracking at the upper end of the range of projections.[2] There is also increasing concern about the stability of the Greenland and West Antarctic ice sheets, with implications for sea-level rise.[3]

If emissions continue to increase at the current rate, the concentration or stock of greenhouse gases in the atmosphere will be around 1000 part per million (ppm) of carbon dioxide equivalent (CO_2-e) in the second half of the century compared to 384 ppm in 2005 and 280 ppm in pre-industrial times.[4] Such a concentration is expected to have severe impacts on our environment.

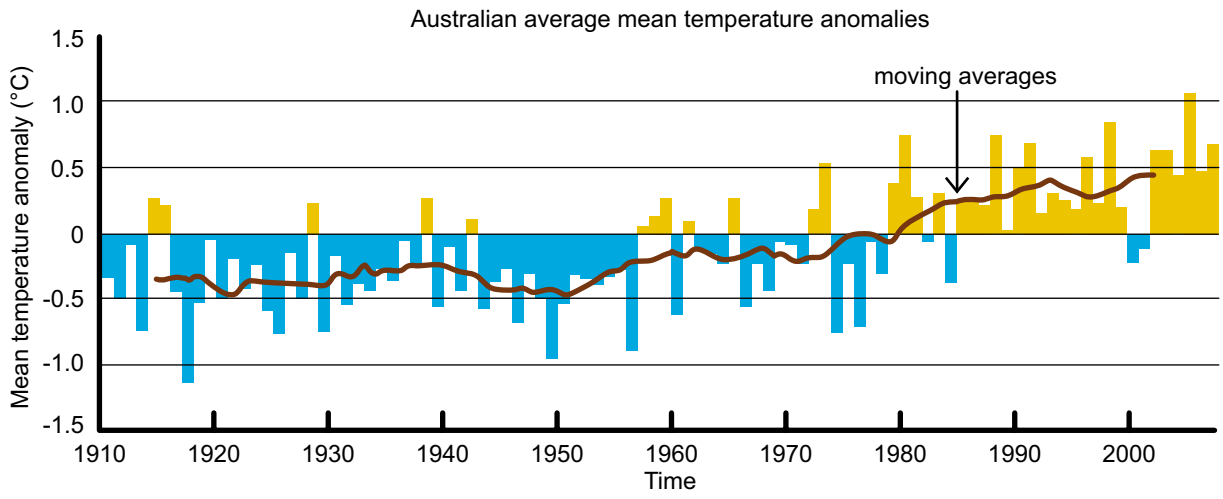
Under a high emissions scenario, average temperatures across Australia are expected to rise by up to 5 degrees by 2070. The IPCC concluded that Australia's water resources, coastal communities, natural ecosystems, energy security, health, agriculture and tourism would all be vulnerable to climate change impacts if global temperatures rise by 3 degrees or more.[5]

While climate change is usually thought of as involving incremental change, in reality for many locations the main risk from climate change will be an increase in damage from specific events, such as severe storms, heatwaves, intense cyclones, drought and fire. [6]

Climate change impacts are not necessarily linear or predictable. For a number of environmental systems there are thresholds above which consequences quickly become critical or the damage becomes exponential; for example coral bleaching when surface sea warming exceeds a coping threshold, and toxic algal blooms when temperatures increase in waterways.[7] In our built environment, a 25 per cent increase in wind gust speed can lead to a 550 per cent increase in damage costs for buildings, with risks to human safety, largely because building or engineering standards have been exceeded.[8]

Changes in Australia's climate and effects on human and natural systems are observable already, and the magnitude of impacts will grow as the climate continues to change in decades ahead. Annual average temperature in Australia has increased by 0.9°C since 1910 – see Figure 1. The black line shows the 10-year trailing average.

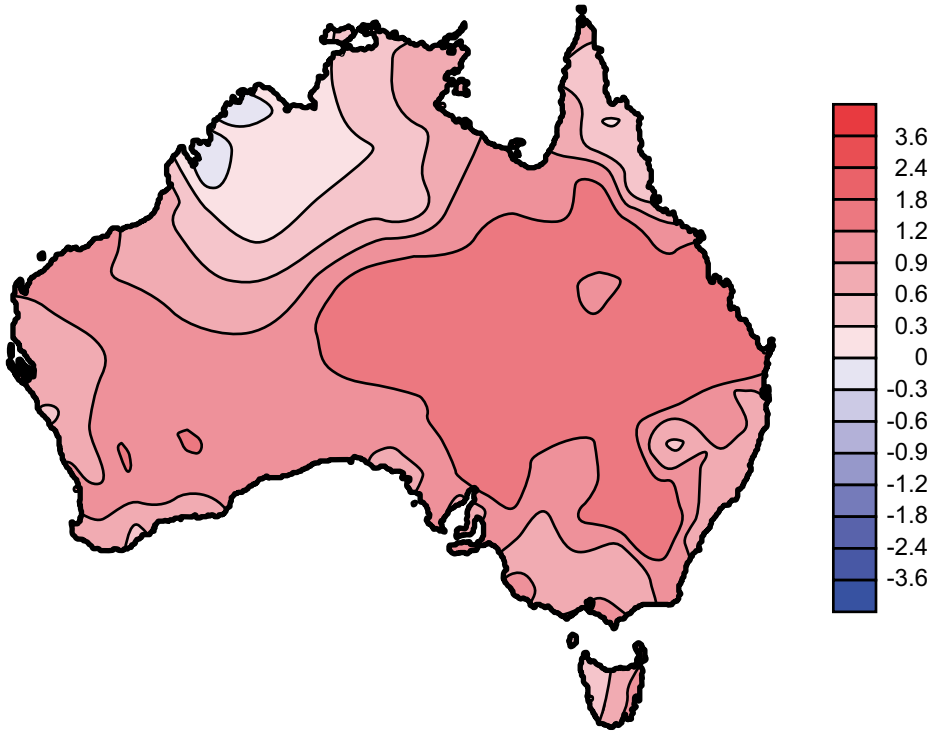
Figure 1 Australian average mean temperature anomalies



Source: Bureau of Meteorology

The increase in temperature has not been uniform across Australia. For example, average annual temperatures have increased by 1.2 C in Queensland. Figure 2 shows regional trends in annual average temperatures since the 1950s.

Figure 2 Trend in mean temperature 1950-2007 (°C per decade)

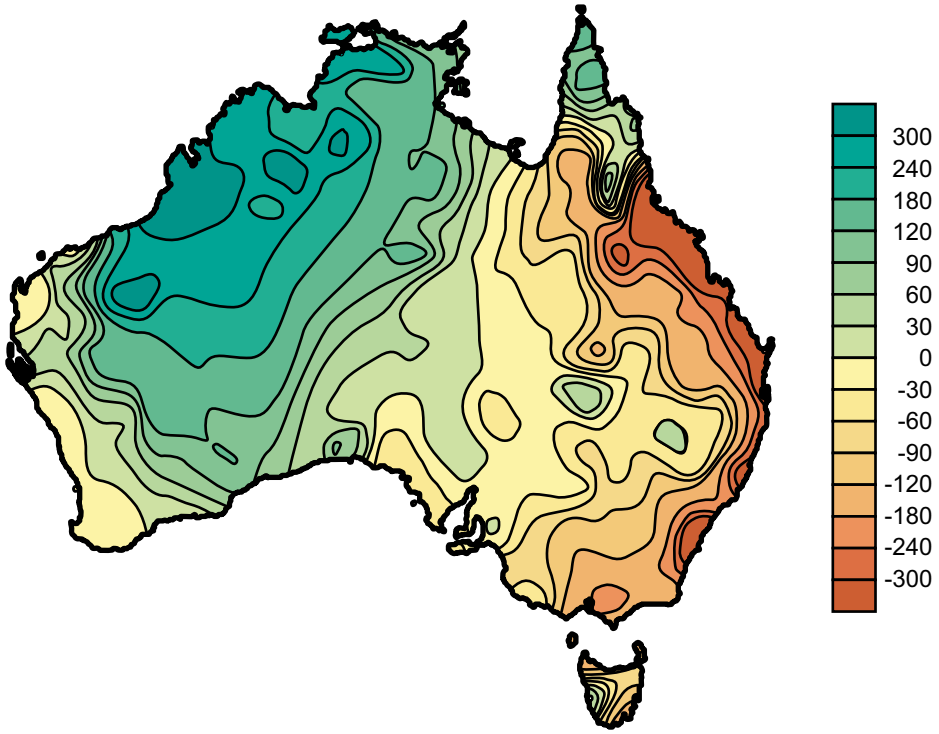


Source: Bureau of Meteorology

A recent study undertaken by the Bureau of Meteorology and the Commonwealth CSIRO into exceptional climatic events for the Department of Agriculture, Fisheries and Forestry found a strong tendency for more exceptionally hot years, which are projected to occur once every 1–2 years by 2010–2040 compared to once every 22 years in the period 1900–2007.

Significant changes in rainfall patterns have also been observed. Figure 3 below shows changes in rainfall patterns across Australia. Since the 1950s, most of eastern and southwestern Australia has become drier, while the north east of Australia has become wetter. This drying is marked by both an increase in exceptionally dry years and a near absence of very wet years, giving rise to drier soils and lower dam inflows.

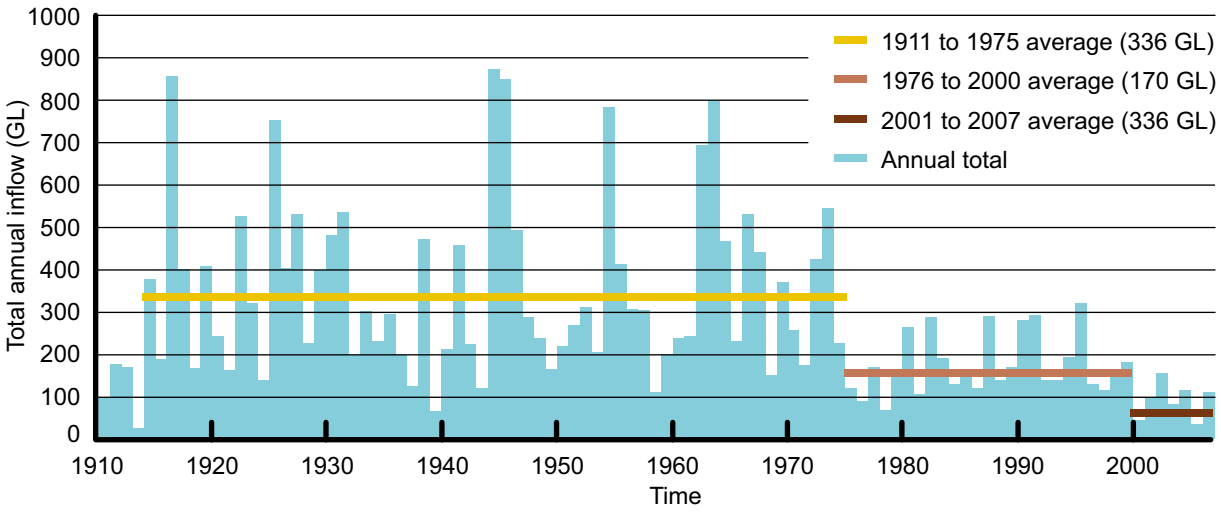
Figure 3 Trend in Annual Total Rainfall 1950-2007 (mm per decade)



Source: Bureau of Meteorology

Reductions in rainfall result in proportionately larger declines in the amount of water flowing into rivers and dams ('streamflow'). This effect is exacerbated by higher temperatures. In the Murray Darling Basin, a 10 per cent change in rainfall has already resulted in a 35 per cent reduction in streamflows. Over the last decade, the average streamflows supplying water to Melbourne, Sydney, Brisbane, Adelaide and Canberra have fallen, with recent streamflows 40 to 60 per cent below the one hundred year average. For Perth, annual dam inflows in 1975 to 1996 were about half the average for 1911–1974. For 2001–2007 inflows were about a quarter of the longer term average. See Figure 4 below.

Figure 4 Annual streamflow into Perth's dams



Notes: Values represent totals for May-April

Source: Western Australia Water Corporation

Water security is already a major challenge in southern parts of the continent and the costs of meeting this challenge will be significant. The cost of water in Melbourne is expected to double over the next five years, reflecting the cost of providing new water supplies. A desalination plant to supplement Perth's water supply in 2006 cost $387 million.

Streamflows in the Murray-Darling Basin could fall by nearly 50 per cent by the end of the century. This would severely limit production from cropping and irrigated systems, and threaten aquatic ecosystems and the viability of towns and farming communities throughout the Basin. To help adapt to reduced water availability, the Australian Government is already investing $12.9 billion in a long term Water for the Future plan.

The draft report of the Garnaut Review concludes that the costs of climate change for Australia will be relatively greater than for other developed countries. We are already a hot and dry continent. We live in a region of developing countries which are in weaker positions to adapt to climate change than wealthy countries with robust political and economic institutions.

The draft report of the Garnaut Review stated that by 2100 the impacts of unmitigated climate change on Australia could include:

- A 92 per cent decline in irrigated agricultural production in the Murray-Darling Basin, affecting dairy, fruit, vegetables, grains.
- Up to a 35 per cent increase in the cost of supplying urban water, due largely to extensive supplementation of urban water systems with alternative water sources.
- Significant risk to coastal buildings from storms and sea-level rise, leading to localised coastal and flash flooding and extreme wind damage.
- Catastrophic destruction of the Great Barrier Reef, with the reef no longer dominated by corals.
- An increase in heat-related deaths in Queensland each year and a rise in the number of Australians exposed to Dengue virus.[9]

As the IPCC points out, Australia's diverse natural systems, including those underpinning agriculture and fisheries, are highly exposed to long-term climate changes, with limited capacity to adapt. Areas particularly at risk include the Wet Tropics and Kakadu wetlands, alpine areas, and tropical and deep-sea coral reefs including the Great Barrier Reef.[10] However, Australia's scientific research base can help us adjust to some degree of climate change. Recent Australian Bureau of Agriculture and Resource Economics (ABARE) research highlights that the 'adaptive capacity' of our agricultural industries can aid the adjustment and reduce the potential vulnerability to climate change.

Impact of policy responses to climate change

Australia's economic growth has benefited from the rapidly expanding developing economies, particularly in the Asia–Pacific region, driving international demand for our abundant mineral resources, including coal, iron ore, bauxite, alumina, and uranium. Australia is a net energy exporter, with the sector growing by an average 5 per cent a year in real terms over the past two decades, to $38 billion in 2006–07 representing 3.8 per cent of GDP. In 2005–06, coal accounted for 62 per cent of total energy export value, with liquefied natural gas contributing 11 per cent and uranium one per cent.[11]

Australia's economic growth has boosted domestic living standards and consumption, including the consumption of energy. Australia is the world's ninth largest consumer of energy on a per capita basis, and this consumption is projected to grow by an average of 1.6 per cent per annum until 2030.[12] Australia is heavily reliant on brown and black coal for energy. In 2005–06, black and brown coal accounted for 42 per cent of primary energy consumption (and, according to ABARE, 75.6 per cent of electricity generation), while renewable energy sources represented five per cent.[13]

Australia's strong reliance on emissions intensive energy resources means that we could also be vulnerable to poorly targeted mitigation responses by other countries, such as protectionist responses that impose tariffs on Australia's emissions intensive exports. Australia has a strong interest in promoting broad-based, market responses to climate change because these allow abatement to happen where and when it is most cost effective, for example through improving overall energy efficiency.

In contrast, purely regulatory approaches often target the more obvious causes of climate change, leaving untapped more cost-effective forms of abatement. Such approaches could have a disproportionate effect on a country such as Australia which has major fossil fuel reserves. Regulatory approaches alone are likely to increase overall abatement costs, making it more difficult to achieve an effective global response to climate change.

Australia should also seek an international climate change framework which accounts for our particular national circumstances. It is likely that developed countries will be expected to collectively contribute more than any global average figure to the global emissions reduction effort. Our national, social and economic characteristics, especially our growing population, the transport needs of our vast continent and our relatively emissions-intensive economy, mean that we will have higher adjustment costs than

many other countries to reach ostensibly similar goals. These costs should be considered in shaping the pace of Australia's effort.

The Government's climate change strategy

The Government's three pillar climate change strategy seeks to reduce Australia's greenhouse gas emissions, adapt to the climate change we cannot avoid, and help shape a global solution.

Given the risks that climate change poses to Australia, it is in our national interest to help forge an effective global response to climate change and to begin the transformation that will deliver a safe society, a strong economy, high living standards and growing job opportunities into the future.

The Government's climate change policy is built on three pillars:

- reducing Australia's greenhouse gas emissions
- adapting to climate change that we cannot avoid
- helping to shape a global solution that both protects the planet and advances Australia's long-term interests.

The first pillar is marked by the Government's commitment to reducing Australia's greenhouse gas emissions by 60 per cent below 2000 levels by 2050. There are important links between Australia's domestic and international climate change strategies. Australia's determination to make the transition to an economy with lower emissions, while maintaining high standards of living, helps sustain the international argument for stronger global action to reduce emissions.

The second pillar is a consequence of the fact that the science tells us that some degree of climate change is now unavoidable. Even if global mitigation efforts are successful, there is already substantial change built into the global climate system to which we will need to adapt.[14] The impacts of these changes represent considerable risk to assets, investment, environments, communities and regional economies. The costs of inaction from damage or asset loss are highly likely to exceed the costs of adaptation. Policy responses such as the $200 million Great Barrier Reef Rescue Plan and the long term $12.9 billion Water for the Future plan have been important first steps.

The third pillar reflects the fact that Australia has the capacity to influence the post-2012 outcome. In the current global negotiations on climate change, a key Australian objective for the post-2012 outcome is to achieve mitigation actions by all major economies, noting that the nature of individual commitments would differ according to national circumstances. In seeking a more robust multilateral response, the critical objective for Australia is to broaden the number of countries willing to take commitments. While all countries should act to mitigate climate change, the top 15 emitters are responsible for nearly three-quarters of global greenhouse gas emissions. The participation of these countries in a post-2012 outcome on mitigation is critical. Developed countries will be required to take the lead on reducing greenhouse gas emissions, as they have contributed

the bulk of the existing stock of human-caused, or so called anthropogenic, greenhouse gases already in the atmosphere. However, the rapid growth in the emissions of developing countries means that their participation will also be necessary to deliver any effective global solution.

The Bali Road Map agreed at the 2007 Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) envisages that Australia and other advanced countries will adopt economy-wide targets. Developing countries also need to take action to slow the growth of their emissions, while at the same time continuing their economic and social development. An effective post-2012 outcome needs to reflect actions by all key countries, in binding international commitments which are consistent with our global agreement to common but differentiated responsibilities and respective capabilities. The Government expects that the nature and scale of commitments will differ but all nations of the world need to play their part and make binding commitments to do this.

Being part of the group of countries acting on climate change will enhance our seat at the international negotiating table. It will also reduce the economic costs and enhance the opportunities associated with moving to a low carbon world. Earlier action allows a more gradual transition to a low carbon economy, allowing individuals and businesses to adjust and learn over time. This learning process will give us a competitive advantage compared with countries that persist with economic structures based on carbon prices that are not sustainable.

Furthermore, by participating in a lower carbon economy through the global negotiating process, we enable Australian businesses to more fully participate in a new growing global market for renewable energy technology. Moving to a low carbon economy will create opportunities to develop expertise in expanding markets for clean technologies.

Developing a Carbon Pollution Reduction Scheme

The Carbon Pollution Reduction Scheme is a market based approach and is more flexible and lower cost than regulation alone. The Australian economy is well placed to handle the introduction of the scheme while securing our long-term prosperity.

This green paper sets out a proposed approach for a Carbon Pollution Reduction Scheme. It identifies a range of options, carefully assesses their merit, identifies remaining information gaps and, in doing so, outlines dispositions and preferred policy positions as a basis for further public consultation. The positions outlined in this document represent the Government's current thinking based on available information. Preferred positions and dispositions should not be interpreted as statements of the Government's final policy intent. Stakeholder feedback is invited on all aspects of this green paper in order to inform the Government's final decisions on scheme design. The Government intends to reflect its final decisions in a white paper, accompanied by exposure draft legislation, to be released in December 2008.

The Government recognises that the introduction of emissions trading is a major and far-reaching reform. Accordingly, it intends to take a methodical, careful and consultative approach to developing and implementing this critical reform. It will not be rushed into precipitate decision making – all Australians have an interest in developing an effective and sustainable emissions trading scheme.

The Government's overriding objective is to get the design right.

Getting the design right requires that the scheme complement the Government's integrated economic policy framework. In particular, the scheme design, and accompanying schemes for household and business support, need to be consistent with the Government's fiscal strategy and the focus on expanding the productive capacity of the economy while restraining inflation.

This requires care and caution in both design and implementation, to ensure the scheme is capable of delivering ongoing emissions reductions over the long term while safeguarding our hard-earned macroeconomic stability and securing our long-term competitiveness and prosperity.

The Government's intention is to implement the Carbon Pollution Reduction Scheme in 2010. The nature of the problem requires action, and it is in Australia's national interest to develop a comprehensive scheme suited to our national circumstances in parallel with international discussions. Emissions trading design has been canvassed extensively in recent years and there is value in putting in place a clear legislative framework with which businesses and consumers can plan for the future. Excessive delay would prolong a period of investment uncertainty.

The longer we wait to take action on climate change, the sharper the adjustment to the economy will be when we are forced to act. Taking earlier action will allow an orderly, gradual transition to a low-carbon economy. Delaying action would require sharper, more rapid – and thus more costly – adjustments later.

Substantially reducing Australia's national emissions will involve the most significant structural reform of the economy since the 1980s. This reform process will not be easy and involves significant challenges. Meeting these challenges will require the Government to implement responsible economic policies focused on reducing emissions at the lowest possible cost in the context of a complex and challenging macroeconomic environment.

The Australian economy is well placed to face the challenge of responding to climate change. Wide-ranging reforms over the past quarter century have resulted in the flexible, prosperous economy Australia enjoys today. Combined with Australia's recent terms of trade, these reforms have underpinned strong, sustained economic growth and higher living standards. Reforms being progressed by the Government to enhance productivity and participation across the economy – including through the COAG National Reform Agenda and the Australia's Future Tax System Review – are designed to further strengthen Australia's economy. A measured and deliberative transition to a low carbon economy will form part of the Government's long-term economic reform agenda.

Structural reform of the economy will be required, regardless of the particular policies that are used to reduce emissions. Choosing economically inefficient options will not remove the need for structural reform, but will increase the cost, raise the burden and reduce our capacity to assist industries and households though the transition period.

For example, relying on regulation alone would require the Government to know exactly which emissions in which individual firms should be reduced and to implement specific targeted restrictions in specific sectors and sub-sectors of the economy. No government has sufficient information to implement this comprehensively across the economy. Businesses and households are much better placed to know where they can reduce emissions at low cost. The scheme provides the incentives for these reductions to occur.

Emissions trading will be the key mechanism for achieving substantial emissions mitigation in a responsible and flexible manner and at the lowest possible cost. The Carbon Pollution Reduction Scheme represents a continuation of Australia's economic reform path, addressing economic and social matters by harnessing flexible market processes.

In preparing this green paper, the Government has been informed by the Garnaut Climate Change Review. It has also built on the work of the previous Government's Task Group on Emissions Trading and the states and territories' National Emissions Trading Taskforce. It has engaged with state and territory governments through the Council of Australian Governments process. Extensive discussions have been held with industry and non-government organisations through formal consultative roundtables and in smaller meetings.

The green paper is intended to stimulate informed public debate. Further extensive consultation over coming months will ensure that Australia is well placed to implement such a critical national reform.

How does a cap and trade scheme work?

A cap and trade scheme provides a strong incentive for business to cut carbon pollution.

Consistent with international developments, the Government has made a commitment to introduce a Carbon Pollution Reduction Scheme based on a cap and trade scheme. A cap and trade scheme is a way of limiting greenhouse gas pollution, giving individuals and businesses incentives to reduce their emissions.

The Government will need to first set a cap on carbon pollution, which is consistent with the Government's longer term goal of reducing national emissions by 60 per cent compared with 2000 levels by 2050.

The mechanics of a cap and trade scheme are set out in Box 1 below.

Box 1
Mechanics of a cap and trade emissions trading scheme

Step 1: Significant emitters of greenhouse gases need to acquire a 'carbon pollution permit' for every tonne of greenhouse gas that they emit.

Step 2: The quantity of emissions produced by firms will be monitored and audited.

Step 3: At the end of each year, each liable firm would need to surrender a 'carbon pollution permit' for every tonne of emissions that they produced in that year.

The number of 'carbon pollution permits' issued by the Government in each year will be limited to the total carbon cap for the Australian economy.

Step 4: Firms compete to purchase the number of 'carbon pollution permits' that they require. Firms that value carbon permits most highly will be prepared to pay most for them, either at auction, or on a secondary trading market. For other firms it will be cheaper to reduce emissions than to buy 'permits'.

Certain categories of firms might receive some 'permits' for free, as a transitional assistance measure. These firms could use these or sell them.

There are two distinct elements of a cap and trade scheme—the cap itself, and the ability to trade. The cap achieves the environmental outcome of reducing greenhouse gas pollution. The act of capping emissions creates a carbon price. The ability to trade ensures that emissions are reduced at the lowest possible cost.

The cap is the limit on greenhouse gas emissions imposed by the Carbon Pollution Reduction Scheme. The green paper does not address the *level* of scheme caps (the limit on emissions) that will be applied through the Carbon Pollution Reduction Scheme. The Government's intention is to release the medium-term emissions trajectories in the context of the white paper, taking into account a range of factors, including the work of the Garnaut Climate Change Review and modelling undertaken by the Treasury. The Treasury modelling is expected to be released in October 2008. Final decisions on how the cap on national emissions will evolve (the national emissions trajectory) will be made after that work has been published and there has been sufficient opportunity for public scrutiny.

The emissions subject to the cap are referred to as the 'covered' sectors. The Government specifies which emissions sources will give rise to obligations under the Carbon Pollution Reduction Scheme.

After setting the cap, the Government then issues 'permits' equal to that cap. The number of permits gives effect to the cap: for example, if the cap were to limit emissions to 100 million tonnes of CO_2-e in a particular year, 100 million 'permits' would be issued for that year.

Firms responsible for emissions covered by the Carbon Pollution Reduction Scheme will be obliged to acquire and surrender a permit for each tonne of CO_2-e that they have emitted during the compliance year. No limits or caps are imposed on individual

emitters or sectors, so long as they acquire sufficient permits to surrender in respect of those emissions.

The cap will be effective, and the environmental objective met, as long as the compliance and enforcement mechanisms ensure emissions are consistent with the cap. The Government is confident that the compliance and enforcement mechanisms proposed will be effective, as the scheme has been designed to cover a high proportion of national emissions with a relatively small number of liable parties. The scheme is estimated to place obligations on around 1,000 liable firms, covering the bulk of national emissions. More than 99 per cent of all firms in Australia will not need to be directly involved in the regulation of emissions or be required to purchase permits.

Setting a limit means that the right to emit greenhouse gases becomes scarce—and scarcity entails a price. The Carbon Pollution Reduction Scheme will put a price on carbon in a systematic way throughout the economy.

The effects of putting a price on carbon will be profound. Indeed, in its ability to change the economy over time, the Carbon Pollution Reduction Scheme is likely to be on par with past economic reforms such as the reduction in tariffs or deregulation of the financial system. Placing a limit and a price on emissions will change the things we produce, the way we produce them, and the things we buy.

The price on emissions resulting from the Carbon Pollution Reduction Scheme will increase the cost of those goods and services that are most emissions intensive; that is, those goods and services that have the most emissions associated with their production or use. This will change the relative prices of goods and services across the economy, making emissions-intensive goods and services more expensive relative to goods and services with low emissions intensity—providing businesses and consumers with incentives to adjust their behaviour, invest in low-emissions technologies and help Australia reduce emissions.

The Carbon Pollution Reduction Scheme will not result in all sectors reducing emissions by the same proportion or quantity. Generally, sectors with few abatement opportunities will reduce emissions less than those with greater abatement opportunities, but the price faced by all sectors for their emissions will be identical.

The cap will only achieve the desired environmental objectives if it is enforced. This means that firms responsible for emissions covered by the Carbon Pollution Reduction Scheme must monitor their emissions and report to government. Arrangements for the assurance of reported emissions data are required. To create an incentive to comply, penalties for non-compliance are also required.

The second essential element of a cap and trade scheme is the ability to trade. Since carbon pollution permits will be tradeable, the price of permits will be determined by the market.

If a firm can undertake abatement more cheaply than the permit price, it will reduce its emissions, limiting its need to buy permits. Conversely, companies will be willing to pay for permits if it will cost them more to change the way they operate and reduce their emissions.

By trading among themselves, firms achieve the scheme cap at least cost to the economy. Trading allows permits to be purchased by the firms that value them most highly.

Permits can be issued either by auction or by free allocation. As long as the cap remains unchanged, the total abatement outcomes will remain the same.

All measures to reduce emissions will entail a cost. Adopting the Carbon Pollution Reduction Scheme minimises that cost, hence it is a key way of reducing the impacts on households and businesses as they deal with the challenge of climate change.

The objective of the Australian Carbon Pollution Reduction Scheme

There are many choices involved in the design of the Carbon Pollution Reduction Scheme. In reaching preferred positions, the Government has been guided by the objective of the scheme. The objective of the Carbon Pollution Reduction Scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance or the most affected households and firms.

The first part of the objective recognises that it is desirable for emissions reduction targets to be achieved in the most cost-effective way, regardless of where those targets are achieved. The second part of the objective recognises that it is in Australia's national interest to act in partnership with the rest of the world to achieve a global solution. Like other nations, Australia must rely on international cooperation to achieve the necessary reductions in global greenhouse gas emissions. Therefore, it is vital that Australia's mitigation efforts, including the Carbon Pollution Reduction Scheme, are designed to support an effective global response. The third part of the scheme objective recognises that households and firms have made a range of decisions on the basis of current carbon prices and will need time and assistance to adjust.

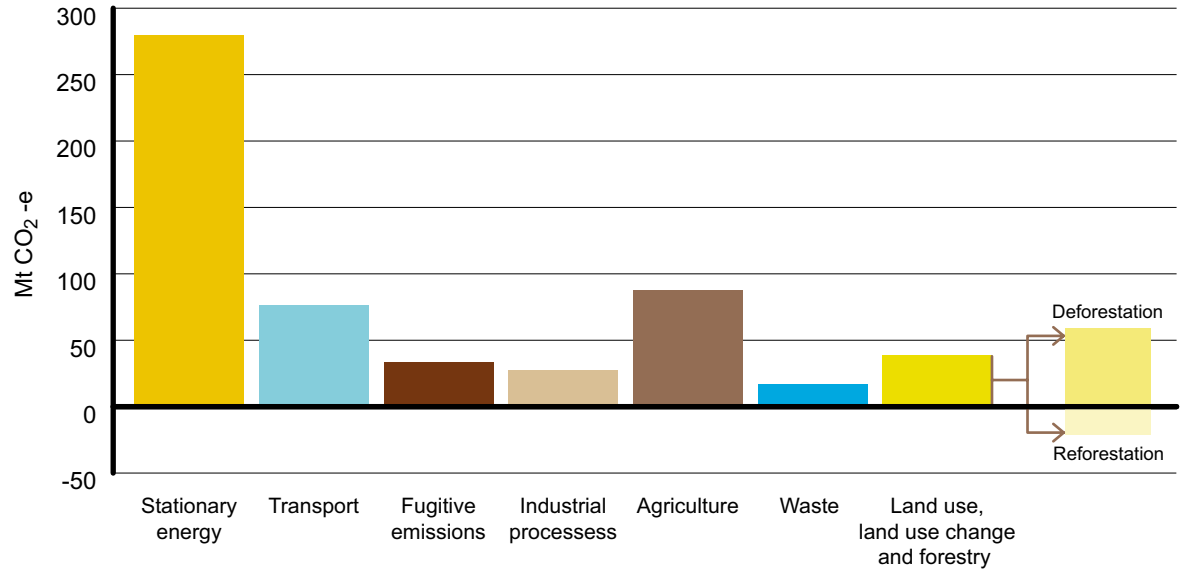
Australia's emissions profile

The bulk of Australia's emissions come from electricity generation, transport and agriculture.

In 2006, Australia's net greenhouse gas emissions using the Kyoto accounting provisions were 576.0 million tonnes of CO_2-equivalent (Mt CO_2-e). The sectoral breakdown of these emissions is shown in Figure 5 below.[15]

The energy sector was the largest source of greenhouse gas emissions, contributing 69.6% (400.9Mt CO_2-e) of emissions (Figure 1). This proportion is less than in many countries, due to the relatively large contribution from the agriculture (15.6%) and land use, land-use change and forestry sectors (6.9%) to Australia's greenhouse inventory. The industrial processes (4.9%) and waste (2.9%) sectors make smaller contributions to this overall national inventory.[16]

Figure 5 Australia's national emissions profile in 2006



Source: National Greenhouse Gas Inventory 2006, Department of Climate Change

Coverage proposals including transport, forests and agriculture

Broad coverage reduces the costs of cutting pollution—the scheme will cover the bulk of Australia's emissions. The Government will ensure a measured transition with policies tailored to the particular circumstances of transport and agriculture.

The Government has announced that the Carbon Pollution Reduction Scheme should have maximal practical coverage of greenhouse gas emissions and sectors. Broad scheme coverage is a key element in reducing the overall cost to the Australian economy of achieving emissions reductions. Broad coverage will increase opportunities for low-cost emissions reductions and ensure that the cost of achieving those reductions is shared as equitably as possible across the economy. Broad coverage will also ensure that competing firms and sectors operate within equivalent market conditions.

The Government proposes to cover the stationary energy, transport, fugitive emissions, industrial processes, waste and forestry sectors, and all six greenhouse gases counted under the Kyoto Protocol from the time the Carbon Pollution Reduction Scheme begins.

The Government proposes to cover these sources and sectors via a combination of direct obligations on facilities with large emissions, and obligations on upstream fuel suppliers for the emissions resulting from the combustion of fuel. Synthetic greenhouse gases are proposed to be covered by making bulk importers of synthetic greenhouse gases, large importers of equipment containing synthetic gases, and domestic synthetic greenhouse gas manufacturers (of which there is currently none) liable for emissions resulting from the use of these gases.

Transport

The Government proposes to include the transport sector in the Carbon Pollution Reduction Scheme to ensure ongoing incentives for carbon reduction over time. The Government does not believe that excluding transport from the Carbon Pollution Reduction Scheme is, over the long term, economically responsible. The more sectors excluded from the scheme, the higher the cost faced by the included sectors and, ultimately, by consumers. Excluding petrol on a permanent basis would not lead to lower costs for households—to the contrary, any abatement that would otherwise have come from the transport sector will have to occur elsewhere and at higher cost. For example, if petrol is permanently excluded, other energy costs faced by households will go up further because the overall scheme will still need to meet the Australia's overall carbon cap.

It is often claimed that transport is unresponsive to changes in prices. The evidence indicates that people respond slowly to price changes when making their transport decisions, but that over time price changes affect their decisions. The results of international studies vary, but show that a ten per cent increase in price leads to a fall in transport fuel use in the longer term of up to seven per cent. Australian studies have come up with lower figures, but those studies have all been conducted in periods with more stable and much lower prices. The key is to encourage consumers to adopt greater fuel and energy efficiency measures over time.

The largest fall in oil demand among developed countries since 1983 occurred in 2007. It is also reflected in the pattern of car purchases, which has seen a sharp reduction in the market share of large cars both in Australia and in the United States. New vehicle sales data in Australia shows an increase in sales of small and medium size vehicles and a decrease in sales of large vehicles over the past few years.[17]

The Government also recognises that fuels, unlike other sources of emissions, are currently subject to their own tax regime.

The Government will introduce the Carbon Pollution Reduction Scheme in a measured and responsible way which is mindful of the adjustment costs facing Australian households and businesses. In order to give households time to adjust to the scheme, the Government will make an offsetting cut in fuel taxes with the introduction of the Carbon Pollution Reduction Scheme as part of a broader ongoing policy response to the rising costs of transport fuel which continue to strongly affect Australian households and transport businesses.

> The Government will cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the introduction of the Carbon Pollution Reduction Scheme. The Government will periodically assess the adequacy of this measure for three years and adjust this offset accordingly. At the end of the three year period the Government will review this adjustment mechanism.

The Government's proposal to cut fuel taxes for the first three years of the Carbon Pollution Reduction Scheme on a cent for cent basis to offset the price impact on fuel will allow motorists five years to plan for potentially higher fuel prices. Over this period many people will have the opportunity to make decisions – for example, over the purchase of

a new car – informed by the longer term implications of the Carbon Pollution Reduction Scheme, with consequential impacts on their future demand for fuel.

As the carbon price changes over the first three years of the Carbon Pollution Reduction Scheme, the Government will periodically assess the adequacy of this adjustment mechanism and adjust fuel taxes accordingly.

After three years, the adjustment mechanism will be subject to review.

To assist rural and regional areas, the Government will provide an equivalent rebate to businesses in the agricultural and fishing industries for three years. This is necessary as the excise system effectively does not apply to this sector.

For heavy vehicle road users, fuel taxes will be cut on a cent-for-cent basis to offset the initial price impact on fuel associated with the impact of the Carbon Pollution Reduction Scheme. The Government will review this measure after one year.

Forestry

The Government proposes to include forestry on an 'opt-in' basis from scheme start. A voluntary approach is possible for forestry because, unlike other sectors of the economy, forests are likely to store more carbon than they emit. Forest landholders therefore have an incentive to voluntarily include their forests in the scheme. Forest landholders would be issued carbon pollution permits which are additional to the cap for the increased net quantity of CO_2 that is stored in the forest. For those that have opted in to the scheme a liability would be imposed for net reductions in stored CO_2, consistent with Kyoto Protocol accounting rules.

The Government proposes that only forestry activities that are recognised in Australia's Kyoto Protocol accounts will be eligible for inclusion in the Carbon Pollution Reduction Scheme. If the scheme's definition of forestry was different from the international definition, either the Government would have to purchase international units to ensure that our international obligations are met or the scheme cap would need to be tighter, transferring a larger burden to other sectors. The Kyoto rules exclude forests established prior to 1990 and treat the carbon stored in felled trees as if it had all been released into the atmosphere at that time. The Government believes these accounting rules are not an appropriate reflection of reality—carbon stored in wood products should be recognised in international agreements. Australia will, therefore, increase its efforts to influence changes to the international climate change framework in ways that reflect Australia's particular circumstances, are based on science and provide appropriate incentives to reduce emissions.

The inclusion of forestry on an opt-in basis will provide an incentive for forest landholders, including indigenous land managers, to establish additional forests, or carbon sinks (forests planted for the purpose of permanently storing carbon). This raises other questions regarding potential shifts in land use from agriculture and other environmental impacts such as on water systems and biodiversity. The incentive will be greatest for carbon sinks that are planted with no intention of cutting the trees down. The incentive will be weaker for forests that have been planted for the purpose of felling

as forest landholders will need to take account the possibility of a liability at the point of felling. The Government is aware of these complex land use policy challenges and believes that they are best addressed directly through water policy and natural resource management policy.

The strength of the incentives will depend on the precise accounting and reporting arrangements adopted and the extent to which forest managers can adopt management practices to reduce liability (for example, by managing a portfolio of expanding forests). The Government will consult further on these arrangements.

After careful deliberation the Government does not propose to include deforestation in the Carbon Pollution Reduction Scheme. Australian deforestation emissions have reduced markedly since 1990, largely due to increased protections against land clearing. Although deforestation is heavily regulated, some forests can still legally be cleared, posing a challenge, not least the risk of pre-emptive land clearing if coverage was in prospect. In addition, a significant proportion of Australia's remaining emissions from land clearing occurs on small landholdings, which poses special challenges in relation reporting and compliance. The Government believes, however, that deforestation emissions need to be reduced further and it will explore how incentive-based measures might be used to further encourage reductions in deforestation.

Agriculture

The Government does not consider that it is practical at this stage to include agriculture emissions in the trading scheme at commencement. However, for the reasons noted above, it is desirable to have maximal coverage. While the Government is disposed to eventually include agriculture, it recognises that considerable consultation and joint effort with the industry are still required to identify practical methods for inclusion, and to develop reliable and cost-effective methods of emissions estimation and reporting. Accordingly, the Government has decided that the earliest that agriculture should enter the Carbon Pollution Reduction Scheme would be 2015, with a final decision on inclusion or exclusion to be made in 2013 in the light of progress in overcoming practical difficulties and after extensive consultation with the industry.

Overall coverage

The Government notes that when the Task Group on Emissions Trading report was released in 2007, the previous government committed Australia to developing the most comprehensive emissions trading scheme in the world. If the proposals canvassed in this green paper for scheme coverage are adopted, Australia would have one of the most broad based emissions trading schemes in the world.

Offsets

The broad coverage proposed for the Carbon Pollution Trading Scheme creates limited scope for activities to create offset credits. Offset credits are rewards for reductions in emissions measured against an assumed baseline. Offset schemes are administratively complex and require considerable judgment to determine baselines—'what would have happened in the absence of a particular decision'. Determining these baselines is inherently subjective, increasing the risk that schemes do not promote genuine abatement.

Offsets also do not increase national abatement, as the provision of credits into an emissions trading system allows additional emissions in the covered sector.

Since the scheme already creates an incentive to reduce emissions in covered sectors, it makes sense for offsets to be considered only in uncovered sectors. However, if a sector may be covered in future—for example, if agriculture is to be included in the scheme in 2015—it makes little sense to develop offset methodologies and install the required administrative arrangements for such a short period, particularly given the questions raised above regarding baselines and the lack of additional abatement. Accordingly, the Government is not proposing to establish an offset scheme for the agriculture sector prior to a final decision being made in consultation with the industry on final inclusion of agriculture in the proposed Carbon Pollution Trading Scheme (in 2013).

Some particular sources of emissions (or sub-sets of agriculture) are unlikely ever to be included in the scheme, such as emissions from uncontrolled burning of savannah in the tropical north of Australia, which can be reduced through controlled burning management practices. The Government will consult with indigenous land managers on this matter.

Implications of coverage for implementation

The Government's coverage proposals will be carefully designed to reduce implementation risks. Subject to final coverage decisions, the Government estimates that there will be around 1,000 firms compulsorily covered by the Carbon Pollution Reduction Scheme, out of 7.6 million registered businesses in Australia (based on a baseline for inclusion of 25,000 tonnes of carbon per year). Compared with the implementation of the Goods and Services Tax (GST), where around 2 million entities were registered for GST on introduction, very few companies need to prepare themselves to manage direct compliance obligations. Also, most liable parties will already be participating in the scheme's administrative foundation – the National Greenhouse and Energy Reporting System (NGERS) – which commenced on 1 July 2008, well before the scheme's start.

As stated earlier, the Government's intention is that the Carbon Pollution Reduction Scheme will commence in 2010. The Government also recognises the need to ensure that business is ready to implement the scheme by this time. For this reason, we will be consulting over the coming months with business and other stakeholders on the specific implementation arrangements for business.

Creating a robust carbon market

Credibility of the scheme and associated financial markets is critical to reducing carbon pollution at lowest cost.

The Carbon Pollution Reduction Scheme involves creating a new financial market to meet an environmental objective. In so doing, it provides Australia with opportunities for new industries and new jobs. This market needs to be credible over a long period to drive the investment in abatement and low-emission technologies required to deliver the environmental and economic benefits.

If a credible market exists, financial markets are likely to have greater confidence in estimating prices at future dates and are likely to establish traded financial instruments that reflect these estimates. These are known as forward prices. Forward prices allow investors to make decisions with a higher degree of certainty about the prices that will prevail over the life of their investment. A range of proposed design features are intended to provide transparency and medium-term certainty for market participants.

The Government proposes to issue carbon pollution permits as the units of trade under the Carbon Pollution Reduction Scheme. The Government proposes to auction the majority of permits, generating revenue that will be used to assist households and business with the adjustment to the scheme. Over the long term the Government proposes moving to 100 per cent auctioning.

The cap for the scheme will depend on the national emissions trajectory. The Government's intention is to indicate a medium term target range in the white paper process. A target range may be required given the need to take into account the uncertain and evolving state of international negotiations on global action on greenhouse gas reductions.

The Government's intention is that the trajectory of the scheme, taken together with other key design elements, assists with smoother, gradual and measured implementation of the Carbon Pollution Reduction Scheme. The Government's decisions related to the trajectory, banking and borrowing, the price cap and the extent of international linking are particularly important for ensuring a measured start to the scheme.

The Government intends to outline an indicative national emissions trajectory in the shorter term for the purposes of setting scheme caps necessary for the overall operation of the scheme.

The Government proposes that the carbon pollution permits would be personal property and that the legislation implementing the scheme would not provide any power to extinguish them without compensation. Each permit would represent one tonne of CO_2-e. Permits would be 'date stamped' with the cap year to which they belong. Essentially no barriers are proposed as to who could purchase or hold these permits, to increase the liquidity of the permit market. Ownership of permits would be tracked in a national registry.

The Government proposes that carbon pollution permits could be used in any year from or after their year of issue (this is commonly referred to as unlimited banking).

For example, a 2010 carbon pollution permit would be valid for use in 2010 and in any subsequent year. Unlimited banking contributes to a measured start to the scheme by reducing price volatility that can be associated with having the particular circumstances of a single year as a determinant of the price. Unlimited banking also signals the Government's long-term commitment to the future operation of the market.

The Government proposes to allow a limited degree of borrowing from future scheme caps to increase flexibility for liable firms. This could be achieved by allowing liable firms to meet a small percentage of their obligations using permits from the following year. For example, in 2010, a liable firm could surrender some 2011 carbon pollution permits and have them counted towards compliance. The Government will decide the percentage limit on borrowing in the context of the final design decisions. Limited borrowing will contribute to a measured start by providing a more flexible supply of carbon pollution permits, particularly around the time when liable businesses must surrender permits.

The Government also proposes that there be a cap on the price that businesses would be required to pay for permits from the period 2010–11 to 2014–15. This would act to cap not only the costs of individual firms but also the costs of the scheme overall. The Government intends to set the price cap at a level that is above the estimated market price of permits. The intention is that this cap on compliance costs only be used in exceptional circumstances, but it would exist to counter circumstances that would not be consistent with a measured start to the scheme. The price cap would be reviewed at the first review point for the scheme.

Emissions targets and scheme caps

The Government will provide an indication for at least 10 years of the limits on carbon pollution. The Government will take account of international developments when setting the pollution limits.

The annual limit on scheme emissions—the cap—is the central element of a cap and trade scheme. The cap defines the total number of Australian carbon pollution permits that would be issued in respect of that year, and is the principal determinant of the environmental contribution of the scheme. The scheme cap will be a primary determinant of Australian carbon prices so long as there are some limits on the extent to which the Australian scheme is linked to international schemes.

The Government's commitment to reduce emissions by 60 per cent from 2000 levels by 2050 provides a longer term anchor for the emissions trajectory. Shorter term decisions will need to ensure a path to this longer term target that is consistent with a measured start to the scheme.

So long as the scheme has less than 100 per cent coverage of national emissions, there will be a difference between targets for national emissions and the scheme cap. Although scheme caps need to be consistent with national emissions targets, they are not the same thing. The Government will need to estimate the emissions in the uncovered sectors and deduct this estimate from the national emissions target to determine the scheme cap. This highlights the need to separately consider the contribution made by the uncovered

sectors to emissions reduction goals, to ensure equity with those sectors covered by the scheme.

A cap and trade scheme requires the emissions cap to be specified for some period into the future. There is a need to balance the provision of certainty in the market (to help promote an economically efficient response) with the need to maintain policy flexibility. Flexibility is needed to respond to evolving science, as well as the pace and content of international negotiations.

The Government proposes that scheme caps could be set for five years in advance, or longer in the event that international obligations extend beyond this. Scheme caps would be extended by one year, every year, to maintain a constant five-year cap horizon.

The Government proposes that beyond the five-year period of scheme caps it will identify a range within which future scheme caps will be set—a 'gateway'. As the Government extends caps, it must choose figures that lie within the gateway. Gateways are proposed to extend for 10 years beyond the scheme caps, and to be extended by another five years, every five years. Regular independent reviews of the scheme's operation would provide advice to the Government on the appropriate gateways. The combination of cap and gateway arrangements mean that, at any point in time, market participants will know what the caps will be for the next five years, followed by a range within which future caps will be set that would extend a further 5 to 10 years.

At the scheme's proposed commencement in 2010, the Government's intention is that there would be scheme caps for each year up to 2015, followed by a gateway at 2020 and a gateway at 2025. In 2013 there will scheme caps for each year up to 2018, with a gateway at 2020 and 2025. The 2030 gateway would be set for the first time following a review in 2015.

In order to transition to this approach, the Government's intention is to provide an indicative national emissions trajectory for the period 2010–11 to 2012–13 in the white paper process. The Government will take into consideration the state of international negotiations when determining the indicative trajectory as well as the breadth of the proposed target range at 2020.

In 2010 the Government will announce a further two years of the trajectory up to and including 2014–15, or to the end of any new international commitment period, whichever is longer. In 2010 the Government will be able to take account of the evolving state of international negotiations, including the outcome of the Conference of the Parties in Copenhagen, as well as the commitments of the world's major emitters.

In 2008, the Government proposes to announce a methodology for setting scheme caps for the period 2010–11 to 2014–15, consistent with the national emissions trajectory. In early 2010, the Government will announce the finalised scheme caps for the first five years of the scheme (2010–11 to 2014–15) based on the decision rule.

Reporting and compliance

Effective reporting and compliance arrangements will be critical – the scheme builds on the existing National Greenhouse and Energy Reporting System.

Effective reporting and compliance arrangements will be critical to underpinning the environmental integrity and economic efficiency of the scheme.

As part of meeting their obligations under the scheme, liable firms will be required to monitor and report their annual emissions, keep adequate records to enable the assurance of reported emissions and surrender eligible emissions permits equal to their annual emissions.

The *National Greenhouse and Energy Reporting Act 2007* (NGER Act) introduces a single national reporting framework for the reporting and assurance of information related to greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production. The NGER Act states that one of its key objectives is to underpin the introduction of emissions trading, and the Act has been widely supported by industry and community groups.

Where practical, the National Greenhouse and Energy Reporting System (NGERS) will be used as the basis for monitoring, reporting and assurance of emissions under the scheme. However, in some areas, NGERS will need to be strengthened to support the special financial importance attached to emissions reported under the scheme. A staged approach to improvements in measurement methodologies is proposed. The Government will take account of compliance costs and the wider goals of NGERS for improving the collection of energy and emissions data when considering any potential changes. The Government proposes that a single report prepared annually by each liable entity should satisfy requirements under NGERS and the Carbon Pollution Reduction Scheme.

An assurance regime will be required to ensure that emissions are reported accurately, according to approved methodologies. In order to ensure that the data reported under the scheme is robust, it is proposed that large emitters be required to have their emissions reports assured by a third party.

International linking

The scheme will be designed to link with other schemes overseas to contribute to a global solution and to ensure that Australian businesses can access low-cost pollution reduction.

The ratification of the Kyoto Protocol, and the existence of emissions trading schemes elsewhere in the world, creates opportunities to link with international carbon markets. Under the Kyoto Protocol, national emissions targets are calculated taking account of the flexibility mechanisms that allow for the transfer of Kyoto units between parties.

Linking to other schemes broadens the range of available abatement options, reducing the overall cost of meeting an emissions target. If abatement costs are lower overseas, it would be more cost effective to purchase the abatement abroad rather than reduce emissions in Australia, and the global environmental outcome will be unchanged. The purchase of international units will tend to lower the price of carbon pollution permits in Australia.

However, any decision to link would be a decision to recognise the veracity of the regulatory system, including the reliability of the monitoring, reporting and verification systems, of another country. This is true for linking with both cap and trade systems and for offset systems based on a business-as-usual baseline. In the latter case there must also be confidence in the methodologies associated with establishing the baseline, which is inherently more challenging than establishing actual emissions estimates.

In the longer term, the Government has a preference for open linking within the context of an effective global emissions constraint. Because international linkages will assist in building an effective and least-cost global approach to emissions reductions, an open approach to linking is strongly in Australia's national interest. In the short term, principally to minimise implementation risks, the Government proposes that there will be limits on the number of international offset credits that liable firms can surrender for compliance. The Government's intention is to announce these limits in the context of the white paper process. International units that would be accepted, subject to this limit, would be certified emission reductions (CERs) created under the Kyoto Protocol's clean development mechanism, emission reduction units (ERUs) created under the joint implementation mechanism and removal units (RMUs) created in respect of land use, land use change and forestry activities.

In the initial years of the scheme the Government proposes not to allow the export of Australia's own Kyoto Protocol compliance units. Export of units would place upward pressure on the domestic emissions permit price and could be a source of unnecessary volatility while the scheme is bedded down, which would be counter to the goal of seeking a smooth introduction. The Government intends to make final decisions on whether to allow the export of international offset credits created in Australia through the Kyoto Protocol's joint implementation mechanism in 2013 in the context of decisions on domestic offsets.

Assistance for households

Every cent raised by the scheme will be used to help households and business adjust. The revenue raised allows the Government to assist households – particularly low-income households – and business adjust to the impact of the scheme.

The introduction of the Carbon Pollution Reduction Scheme will result in changes to a wide range of prices, although the overall increase in the cost of living is expected to be modest. Nonetheless, the Government recognises that even a modest increase in the cost of living impacts on household budgets.

As the scheme is intended to deliver abatement, and not to adversely affect the distribution of income and wealth, the Government will provide low income households with increases in assistance through the tax and payment system and all households with other assistance to address the impact on their living standards.

The Government will cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the introduction of the Carbon Pollution Reduction Scheme. The Government will periodically assess the adequacy of this measure for three years and adjust this offset accordingly. At the end of the three year period the Government will review this adjustment mechanism.

The revenue provided by the auctioning of the carbon pollution permits provides the Government with the capacity to assist households, particularly low-income households, to meet increases in costs associated with the scheme.

Every cent raised for the Australian Government from the Carbon Pollution Reduction Scheme will be used to help Australians – households and business – adjust to the scheme and to invest in clean energy options.

The Government commits to:

- Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and to provide other assistance to meet the overall increase in the cost of living flowing from the scheme.
- Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme.
- Provide assistance to middle-income households to help them meet any overall increase in the cost of living flowing from the scheme.
- Review annually in the Budget context the adequacy of payments to beneficiaries and recipients of family assistance to assist households with the overall impacts of the scheme, noting that these payments are automatically indexed to reflect changes in the cost of living.
- Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills so that all can make a contribution.

The Government has indicated in the terms of reference for Australia's Future Tax System Review that it is to consider the interrelationship between the tax and transfer payment systems and the Carbon Pollution Reduction Scheme.

The Government's commitments to households are part of a broader approach to managing the transition to a low emissions economy.

As long as support to households takes the form of cash, rather than subsidies linked to actual consumption of specific products (for example, a subsidy for every kilowatt hour of electricity consumed), this assistance should not blunt the incentive to change behaviours in ways that result in lower emissions. These changed incentives

for households will also stimulate businesses to provide goods and services that are produced with fewer emissions, thereby reducing emissions and giving households greater choice. In the case of petrol, the Government's policy will maintain the long-run incentives to use fuel more efficiently, and give motorists time to plan for potentially higher fuel prices.

More generally, the impact on households will depend critically on their capacity to change behaviour and to pursue energy efficiency enhancements. For households, this centres on improving the efficiency of housing, household appliances and transportation. Households can take a range of actions to reduce their carbon footprint and the Government will expand support programs as well as provide information, education and advice to the community on how energy efficiency can best be increased.

The Government will consider new energy efficiency initiatives with the intention that implementation begin prior to the commencement of the scheme. The Government acknowledges that low-income households often face restrictions on their capacity to take up energy efficiency measures, due to insufficient access to capital as well as a lack of information. These matters will be taken into account in designing the measures.

Together, these policies will protect the poorest and most vulnerable in society, assist working families, and allow all Australians to contribute to the critical national challenge of managing the transition to a less emissions intensive economy.

Assistance for business, regions and workers

The Government will establish a Climate Change Action Fund to assist business to transition to a cleaner economy.

The challenge of adjusting to a lower emissions environment will be broadly shared across the economy.

The Government proposes to establish the Climate Change Action Fund (CCAF). The purpose of the fund is to assist business transition to a cleaner economy, by providing in partnership funding for a range of activities, including:

- Capital investment in innovative new low emissions processes
- Industrial energy efficiency projects with long payback periods
- Dissemination of best and innovative practice among small to medium sized enterprises.

The Government proposes to settle funding arrangements for the fund in the context of final design decisions for the Carbon Pollution Reduction Scheme. The Government will take into account the outcomes of the Wilkins Review and the COAG assessment of complementary measures in setting the final design for the Fund.

The regional impacts of adjustment may be concentrated. While structural adjustment measures already in existence provide a means to assist affected workers and regions, the Government will provide additional support.

Emissions-intensive trade-exposed industries

The Government proposes to provide assistance to the most heavily emissions-intensive trade-exposed activities.

The extent of cost increases for businesses arising from the cap on emissions will depend on the emissions intensity of their activities—the more emissions they produce per unit of output, the higher the relative cost.

Many businesses will be little affected by the scheme, as they face the same cost increases as their competitors. However, trade-exposed industries may not be able to pass on the costs as they face prices set in international markets, and compete against firms that do not at this stage have comparable carbon constraints.

In the absence of assistance, if constraints on emissions are placed on activities in Australia but not elsewhere, there is a possibility that some emissions-intensive trade-exposed activities (EITEs) may choose to leave Australia (or new investment could be discouraged). If these EITEs choose to relocate elsewhere, with no consequent global reduction in emissions, it results in what is called 'carbon leakage'.

The Government proposes to address the problem of potential carbon leakage by providing a share of free permits to the most emissions-intensive trade-exposed activities.

The Government proposes to assist those firms that have a sufficiently material impact on their cost structures as a result of the scheme. The Government proposes using a measure based on emissions intensity per unit of revenue rather than one based on emissions per unit of value add as this is a more transparent and comparable indicator. Value add measures could also lead to firms with very small emissions liabilities but small value add being eligible for assistance. Measures based on value add can be highly volatile and very sensitive to the particular estimation method. In contrast revenue is an easily observed and well understood measure.

Determining the allocation of free carbon pollution permits involves a balance between the competitive position of emissions-intensive trade-exposed industries and the rest of the economy. On the one hand, if assistance is not provided these industries may be disadvantaged relative to their international competitors. On the other hand, the provision to these firms of free carbon pollution permits based on their ongoing production will impose a greater adjustment burden on the rest of the economy. That is, the non-assisted industries and firms will have to reduce their emissions even further. For this reason, assistance must be confined to those industries most at risk of carbon leakage—the most significantly emissions-intensive trade exposed sectors.

The Government proposes to allocate a share of free carbon pollution permits to the most emissions-intensive trade-exposed activities. The Government also proposes to take into account the likely allocation that would need to be provided to parts of the agriculture sector were it to be included in the scheme after 2015, given the emissions intensity and trade exposure of major agricultural industries.

The Government proposes to allocate permits on the basis of the most emissions intensive activities that lead to the production of trade-exposed products, rather than on the basis of a firm or industry level. Ultimately, it is these activities, rather than firms or industries (which may include a mixture of high- and low-emissions intensity processes), that are at the greatest risk of carbon leakage. If a firm ceased to operate these activities in Australia, its supply of free permits would also cease.

The Government proposes to provide free permits for a high proportion of the emissions of the most emissions-intensive trade-exposed activities while providing significant, but lower, levels of assistance to a class of activities that are moderately emissions intensive and trade-exposed. The Government proposes to establish a list of activities that would fall into these two categories. The list of activities would then be included in regulations and the scheme regulator would issue permits according to a formula related to the output associated with those activities. Such an approach would ensure that all industries incur some of the costs of emitting, with scaled assistance for those facing significantly more material costs than other firms.

Based on currently available information, the Government's preferred position is to allocate up to around 30 per cent of carbon pollution permits to emissions-intensive trade-exposed activities.

The Government proposes that activities with:

- an emissions intensity above 2,000 t CO2-e/$ million revenue would have the initial assistance level set at around 90 per cent of industry average emissions per unit of output
- emissions intensities between about 1,500 and 2,000t CO2-e/$ million revenue would have the initial assistance level set at around 60 per cent.

The Government proposes to provide assistance on the basis of industry average activity emission intensities rather than the intensity of a particular firm or facility. This approach will ensure that businesses have an incentive to reduce their emissions leading up to the introduction of the scheme and would reward those firms that have already taken action to reduce their carbon footprint.

The Government also proposes that the rate of assistance per unit of output given to these firms should be gradually reduced over time at a pre-announced rate to ensure that all parts of the economy contribute to the objective of reducing emissions. If the rate of assistance did not decline, the share of permits provided free would rise as the sector grew and the national cap declined, shifting an ever increasing burden onto the rest of the economy.

The Government also proposes to assist new EITE investments in these activities in a manner comparable to the way in which it treats existing investments.

While the Government's preferred position is to allocate up to around 30 per cent of carbon pollution permits to EITE industries, the precise threshold figures, proposed rates of assistance, the structure of assistance and the preliminary list of activities that would be covered (outlined in the body of the green paper) are indicative only. Further,

if subsequent information indicated that the parameters listed above would result in an allocation of carbon pollution permits above or below 30 per cent of national emissions, then the Government would need to recalibrate the parameters.

The green paper consultation process is intended to provide an opportunity for stakeholders to place information on emissions and production levels before the Government. The Government strongly encourages stakeholders to provide any relevant information to inform the final decision, being mindful of the Government's overall disposition that these sectors should contribute, along with all other sectors and households, to the national abatement task. Information provided through the consultation process will be taken into account when the Government makes final decisions on thresholds and shares. The Government intends to ensure that an appropriate degree of support is provided to emissions intensive trade exposed firms taking account of both the risk of carbon leakage and the efforts required of the rest of the economy.

Strongly affected industries

The Government proposes to provide a limited amount of direct assistance to existing coal-fired electricity generators.

Based on information available to date, the Government considers that the firms most likely to be considered strongly affected are coal-fired electricity generators. Such generators could potentially face reductions in their asset values as a result of the scheme.

The Government has come to this conclusion on the basis that they are highly emissions intensive, unable to fully pass on their carbon costs, owners of significant long-lived assets with limited alternative uses and able to access few, if any, financially viable abatement options.

These considerations highlight the potential benefits from developing new clean coal technologies, in particular the development of commercially viable carbon capture and storage (CCS) technology. Commercially viable CCS would assist current coal-dependent regions to grow and prosper. However, the imperative to develop clean coal options is not purely domestic. Coal is the most plentiful and broadly distributed energy source on the planet. Countries such as India and China will have strong incentives to use coal for many reasons, including energy security and hence CCS will necessarily be a critical part of any global solution. As a major coal exporter, Australia has a key interest in supporting the development of CCS to enable coal to be used in a way that does not compromise the global climate change objective.

The Government has provided significant funding to CCS via its $500 million Clean Coal Fund – success in this area will help ensure the long-term viability of domestic coal-fired electricity generation and of our coal-producing regions.

The fact that existing coal-fired generators are likely to be strongly adversely affected by the scheme does not, of itself, justify the provision of additional assistance. Among other

considerations there is a question as to whether investors have factored in the possibility of a carbon constraint given the longstanding debate around climate change.

In addition, every carbon pollution permit provided to an electricity generator is one less permit that could have been sold, and less revenue that is available to assist households or other industry groups.

However, there are broader economic factors that are worthy of consideration. If the change in regulatory arrangements was unanticipated and implemented without compensation, and investors viewed this as evidence that the Government was likely to change the regulatory regime in future in an unpredictable way, then investors might regard Australia's electricity market as a riskier investment proposition. An increased perception of risk would increase the expected returns required by investors before they would invest, potentially delaying new investments in the generation sector. The extent of this risk is unquantifiable as it is based on the subjective views that investors may have held in the past and the view that they may take of the stability of the new investment environment in electricity.

To ameliorate the risk of adversely affecting the investment environment, the Government proposes to provide a limited amount of direct assistance to existing coal-fired electricity generators.

The Government has a disposition to deliver this assistance, in part, through a new mechanism called the Electricity Sector Adjustment Scheme (ESAS).

To ensure a simple system that does not require detailed knowledge of individual asset characteristics, any assistance would be determined on the basis of the generator's capacity, and whether it uses black or brown coal. The Government proposes to determine the level of assistance to be allocated to generators following further consultation with the sector and after decisions on the medium-term emissions targets. This assistance would be subject to review to minimise any prospect of windfall gains for generators.

The Government has a disposition to deliver this assistance, in part, through a new mechanism called the Electricity Sector Adjustment Scheme (ESAS).

An integrated strategy, with ESAS operating alongside the Government's existing programs such as the National Clean Coal Initiative, would deliver support to strongly affected industries and workers and communities by:

- underpinning investor confidence in the electricity generation sector
- facilitating structural adjustment for individual firms, workers and regions
- ensuring security of energy supply – including through measures which facilitate adaptation to low emissions production (eg. clean coal technology, and through research and development into energy efficient production systems).

Different delivery mechanisms may be required for various elements of the ESAS, and the Government will discuss the appropriate form of support with stakeholders, including possible options for conditional support that would be consistent with the

economic and environmental objectives of the scheme. These elements could include the provision of free permits.

Scheme governance

The Government proposes to establish an independent scheme regulator and to conduct independent reviews of the scheme every five years.

The Government proposes to establish an independent scheme regulator, whose primary responsibilities will be to monitor and enforce compliance, run auctions for permits, allocate free permits according to clearly specified rules, and maintain the national emissions registry.

The Government proposes that the Executive and the Parliament retain responsibility for decision-making on matters where political accountability is paramount. The Government will set and extend scheme caps and gateways, decide the nature and extent of international links, and decide when allocations of free permits to emissions-intensive trade-exposed industries should cease.

Independent public reviews are proposed every five years to ensure the scheme is achieving its objectives and performing as required.

The role of complementary measures and transitional matters

Complementary measures can supplement the Carbon Pollution Reduction Scheme and assist Australia reduce carbon pollution at even lower cost. The Government is reviewing existing programs to ensure they remain relevant.

While the Carbon Pollution Reduction Scheme will be the primary measure to achieve Australia's emissions reductions targets, other measures will be required to address market failures that a carbon price alone cannot overcome, or to deal with the distributional consequences of the scheme.

However, the presence of the Carbon Pollution Reduction Scheme is likely to mean that some other measures may no longer be required (for example, measures that are currently justified on the basis that no effective carbon price exists or that were introduced prior to a commitment to introduce the scheme). Continuing to use such measures will not lead to an increase in emissions abatement – within a fixed cap, reductions in emissions in one part of the economy simply result in more emissions elsewhere. Therefore, those measures can be justified only if they lead to a lower cost for the given level of abatement or are of a transitional nature such that they change the capacity of the economy to respond, thereby allowing the Government to set a more demanding cap in the future.

Across levels of government, a coordinated approach to assessing and developing complementary measures is desirable. The Council of Australian Governments is currently developing a set of criteria to assess whether existing policy measures are genuinely complementary. The Commonwealth is currently reviewing its own programs to assess whether they meet those criteria. COAG recently noted that all jurisdictions are reviewing the complementarity of their existing climate measures. State and territory governments are also considering the ongoing role of the Greenhouse Gas Reduction Scheme and the Queensland Gas Scheme, with the introduction of the Carbon Pollution Reduction Scheme. The Government will continue to work cooperatively with the New South Wales, Australian Capital Territory and Queensland governments to assist them in their development of appropriate transitional arrangements.

There are also a number of other abatement and other regulatory matters arising prior to the proposed introduction of the scheme. The broader matter of retail price regulation for electricity and gas consumers is currently being progressed through the work of the Ministerial Council on Energy. The Government supports the principle of this market reform agenda.

Next steps: engagement in the process and final decisions

Submissions are invited in response to the green paper and widespread consultation will occur over coming months.

Submissions are invited in response to the green paper. The Government will take stakeholder feedback into account when preparing a white paper and accompanying exposure draft legislation.

The Government's intention is to provide an indication of medium-term targets in the white paper process.

Following feedback on the exposure draft, the Government intends to introduce the Carbon Pollution Reduction Scheme legislation into Parliament in 2009, aiming to achieve passage of the Bill by mid-2009. During 2009, consultation on the emissions trading regulations will
be undertaken.

The Act is proposed to come into force later in 2009. At that time, the scheme regulator will be established. It is intended that arrangements to prepare for the formal establishment of the regulator will be undertaken before then to assist in the smooth commencement of the scheme.

It is the Government's intention that the Carbon Pollution Reduction Scheme will commence in 2010. The Government recognises the need to ensure that business is ready to implement the scheme by this time and will consult with the community an business over the coming months. As discussed above, the fact that the scheme will have only around 1000 firms as compulsory liable parties and that the NGERS system is already collecting emissions data means that a 2010 start date is administratively feasible.

Making a submission

Stakeholders are encouraged to engage fully in the consultation process and consider carefully the options canvassed in this report. The Government invites interested parties to register their interest and make a written submission.

Stakeholders may comment on any matter they consider relevant to the design of the Carbon Pollution Reduction Scheme. In particular, they may wish to comment on the design options canvassed in this report, with a focus on the Government's preferred positions.

Stakeholders can be assured that submissions made to previous processes of the Task Group on Emissions Trading, the National Emissions Trading Taskforce and the Garnaut Climate Change Review will be taken into account. However, stakeholders can re-submit part or all of the submissions made to those bodies if they so wish.

Each submission, unless it is made in confidence, will be published on the Department of Climate Change's website, at which time it will become a publicly available document. This will occur soon after the submission is received, unless it is accompanied by a request to delay release for a short period. Submissions will remain on the department's website indefinitely. Copyright resides with the author(s), not with the Government.

Submissions are due on or by 10 September 2008.

Submissions can be forwarded to:

Postal: Carbon Pollution Reduction Scheme Green Paper Submission
Department of Climate Change
GPO Box 854
Canberra ACT 2601
Australia

Email: emissionstrading@climatechange.gov.au

A cover sheet for submissions is available at www.climatechange.gov.au or can be requested from the Department of Climate Change on 1800 057 590.

Important: Please indicate clearly if you want your submission to be treated as confidential or anonymous.

Confidentiality statement: All submissions will be treated as public documents, unless the author of the submission clearly indicates the contrary by marking all or part of the submission as 'confidential'. Public submissions may be published in full on the website, including any personal information of authors and/or other third parties contained in the submission. If your submission contains the personal information of any third party individuals, please indicate on the cover of your submission if they have not consented to the publication of their information. A request made under the *Freedom of Information Act 1982* for access to a submission marked confidential will be determined in accordance with that Act.

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Summary of Preferred Positions

1. Framework

1.1 The objective of the Carbon Pollution Reduction Scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms.

1.2 Design options are to be assessed against the following assessment criteria:

- environmental integrity
- economic efficiency
- minimisation of implementation risk
- policy flexibility
- promotion of international objectives
- implications for the competitiveness of traded and non-traded industries
- accountability and transparency
- fairness.

2. Coverage

2.1 All greenhouse gases included under the Kyoto Protocol—carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons—would be covered from scheme commencement.

2.2 In general, the emissions threshold for direct obligations under the scheme would apply to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more. Different thresholds may be required for the waste sector and synthetic greenhouse gases.

2.3 Stationary energy emissions would be covered from scheme commencement by applying scheme obligations both to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more and to suppliers of fuel to small energy users.

2.4 Transport emissions would be covered from scheme commencement, with scheme obligations applied to upstream fuel suppliers.

The Government would work with the fuel supply industry to develop administrative arrangements to enable fuel that is exported, used for international transport, sequestered in plastics and supplied to visiting defence forces and consular vehicles to be excluded from obligations under the scheme.

The Government has committed to cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the introduction of the Carbon Pollution Reduction Scheme. The Government will periodically assess the adequacy of this measure for three years and adjust this offset accordingly. At the end of the three year period the Government will review this adjustment mechanism.

To assist rural and regional areas, the Government has committed to provide an equivalent rebate to businesses in the agricultural and fishing industries for three years.

The Government has committed that for heavy vehicle road users, fuel taxes will be cut on a cent-for-cent basis to offset the initial price impact on fuel associated with the impact of the Carbon Pollution Reduction Scheme. The Government will review this measure after one year.

2.5 Fugitive emissions would be covered from scheme commencement by applying scheme obligations to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.

2.6 Emissions from industrial processes would be covered from scheme commencement by applying scheme obligations to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.

2.7 Synthetic greenhouse gas emissions would be covered from scheme commencement by applying scheme obligations to bulk importers of synthetic greenhouse gases, large importers of equipment containing synthetic greenhouse gases, and domestic synthetic greenhouse gas manufacturers (of which there are currently none), with a threshold to be determined.

2.8 Emissions from the waste sector would be covered from scheme commencement, with the precise scope of coverage, thresholds and other detailed design issues to be determined.

2.9 Carbon that is transferred to carbon capture and storage (CCS) facilities would be netted out of the originating entity's gross emissions. Scheme obligations for fugitive emissions—from transport of the carbon and from the CCS facility—would be imposed on the operator of the CCS facility.

2.10 Scheme obligations for emissions from fuel combustion would be applied to all fuel excise and customs duty remitters for all liquid fuels currently subject to fuel excise and excise-equivalent customs duty, with thresholds to exclude smaller customs duty remitters to be determined.

2.11 Scheme obligations for emissions from synthetic liquid fuels would be applied to fuel excise and customs duty remitters.

2.12 Scheme obligations for emissions from liquefied petroleum gas would be applied to producers, marketers, distributors and importers of liquefied petroleum gas supplied to energy users.

2.13 Scheme obligations for emissions from domestic combustion of liquefied natural gas and compressed natural gas would be applied to producers of those fuels.

2.14 Scheme obligations for emissions from natural gas combustion would be applied to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more, and to natural gas retailers for emissions from gas supplied to small emitters, or to gas producers where they supply directly to small emitters.

2.15 Scheme obligations for emissions from black coal combustion would be applied:

- to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more
- to all coal mines, distributors, washeries, and producers of coke and coal by-products for emissions from small emitters.

2.16 Scheme obligations for emissions from brown coal combustion would be applied:

- to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more
- on manufacturers of brown coal briquettes and other brown coal by-products for emissions from small emitters.

2.17 Scheme obligations would not apply to emissions from combustion of biofuels and biomass for energy; they would receive a 'zero rating'.

2.18 The scheme would cover only domestic emissions sources and sinks that are counted in Australia's Kyoto Protocol emissions account.

2.19 The Government is disposed to include agriculture emissions in the scheme by 2015 and to make a final decision on this in 2013.

Given the compliance costs that would be involved if scheme obligations were to apply at farm-level, the Government seeks stakeholder views on the merits of an approach to coverage that would apply obligations generally off-farm, at some other point in the supply chain (for example, on fertiliser suppliers, abattoirs, dairies and beef exporters). The Government recognises that any approach will also need to provide appropriate incentives for on-farm abatement.

2.20 All reforestation (as defined for the first commitment period of the Kyoto Protocol) would be included, on a voluntary basis, from scheme commencement in 2010, with design details to be determined.

2.21 After careful deliberation the Government does not propose to include deforestation in the Carbon Pollution Reduction Scheme. Australian deforestation emissions have reduced markedly since 1990, largely due to increased protections against land clearing.

2.22 The scheme would not include domestic offsets from agriculture emissions in the period prior to coverage of these emissions.

The Government would consider the scope for offsets from emissions sources that cannot be included in the scheme in 2013, following final decisions on coverage of agriculture emissions.

The Government is committed to facilitating the participation of Indigenous land managers in carbon markets and will consult with Indigenous Australians on the potential for offsets from reductions in emissions from savanna burning and forestry opportunities under the scheme.

3. Carbon Markets

3.1 A carbon pollution permit (which will be referred to in legislation as an Australian emissions unit) would be an entitlement composed of various 'rights' contained in the carbon pollution reduction legislation. The main rights would be the right to surrender the permit and to transfer it.

The scheme regulator would issue only one type of domestic permit, called an Australian emissions unit (referred to in this green paper as a carbon pollution permit).

The carbon pollution permits would be personal property.

Each permit could be surrendered to discharge scheme obligations relating to the emission of one tonne of carbon dioxide equivalent of greenhouse gas.

Each permit could be surrendered under the scheme only once.

There would not be power to extinguish permits without compensation, unless there had been misrepresentation or fraud by the holder against the Australian Government or the scheme regulator in the creation or issue of the permits.

Permits would be transferable.

Permit holders would only be entitled to surrender permits that they hold on the national registry. Legal title would be transferred only by entry in the registry.

The creation of equitable interests in permits would be permitted, as would taking security over them.

Each permit would have a unique identification number and be marked with the first year in which it could validly be surrendered (its 'vintage'). It would not have an expiry date.

The permit would be uncertificated; that is, it would be represented by an electronic entry in the registry rather than by a paper certificate.

3.2 A permit could be held and traded by any legal or natural person (subject to verification of identity and measures to prevent criminal activity).

There would be no restriction on foreign ownership of permits, apart from any that might apply under a law other than the scheme legislation.

3.3 The permit would be a financial product for the purposes of the *Corporations Act 2001*, but some adjustment to that regime may be required to fit the characteristics of permits.

3.4 Unlimited banking of permits would be allowed under the scheme.

3.5. The scheme would permit a limited amount of short-term borrowing by allowing liable entities to discharge up to a certain percentage (less than 5 per cent) of their obligations by surrendering carbon pollution permits dated from the following year.

The exact percentage should be subject to further investigation and should be considered in conjunction with decisions about the level of the initial scheme caps.

3.6 The scheme would have a compliance period of one year. Further consultation with industry will be needed for reporting and compliance periods for reforestation.

3.7 The scheme would have a price cap for the period 2010–11 to 2014–15.

The price cap would be set high enough above the expected permit price to ensure a very low probability of use. The precise level would be set taking into account all information about scheme design and the expected abatement costs in the economy.

The price cap would be reviewed at the first review point, taking into consideration banking and borrowing arrangements, limits on the surrender of international permits for compliance, the maturity of the market and future international linking commitments.

4. Emissions targets and scheme caps

4.1 At the end of 2008, in the context of the white paper, the Government would announce a medium-term national target range for 2020 that provides upper and lower bounds to give investors and market participants information on directions and retains sufficient flexibility for the Government.

4.2 The Government would announce an indicative national emissions trajectory to provide broad guidance on the pathway towards the medium-term target range.

4.3 The Government would announce a minimum of five years of the indicative national emissions trajectory, to be extended by one year, every year as required to maintain a minimum of five years of guidance at all times after commencement of the scheme.

4.4 The difference between the scheme cap and the national target would be explicitly and transparently reconciled through notional allocation (and retirement) of permits for sources of emissions not covered by the scheme.

4.5 Scheme caps would be set and announced for a minimum period of five years in advance at any one time.

In the event that Australia's international commitment period extends beyond five years, scheme caps would be extended to the end of the commitment period.

4.6 Scheme caps would be extended by one year, each year, as required to maintain a minimum five year certainty period. Should the international commitment period (and therefore scheme caps) already extend beyond five years, an annual extension would become optional.

4.7 By using gateways, the Government would provide guidance over future scheme caps beyond the period of fixed scheme caps.

4.8 The Government would provide guidance over future scheme caps beyond the initial certainty period through the use of a gateway in each of the following years, to the end of the gateway period.

4.9 The initial length of the gateway would be 10 years beyond the minimum five years of scheme caps.

4.10 Gateways would be extended by five years, every five years, as part of a strategic review of international conditions and Australia's likely future international commitments.

4.11 The scheme cap would not be adjusted in the event that it is incompatible with internationally negotiated national targets and, if necessary, the Government would make up any shortfall in internationally agreed targets by purchasing international emissions units.

4.12 The Government would announce an approach in early 2010 for expanding the cap to accommodate increases in scheme coverage that provided a smooth scheme price path.

4.13 At the end of 2008, in the context of the white paper, the Government would announce the indicative national emissions trajectory for the period 2010–11 to 2012–13, and in 2010 the Government would announce a further two years of the trajectory up to and including 2014–15, or to the end of any international commitment period, whichever is longer.

4.14 At the end of 2008, in the context of the white paper, the Government would announce an approach for setting scheme caps for the period 2010–11 to 2014–15, consistent with the national emissions trajectory.

In early 2010, the Government would announce the finalised scheme caps for the first five years of the scheme (2010–11 to 2014–15) and 10 years of gateways beyond this period.

5. Reporting and Compliance

5.1 NGERS would be the starting framework for monitoring, reporting and assurance under the scheme, and elements of that system would be strengthened to support the scheme.

Where practical, the scheme would also seek to utilise related provisions in other Australian Government schemes, such as the fuel excise and customs duty arrangements for liquid fuels, to minimise additional compliance burdens.

5.2 In general, entities with operational control over covered facilities or activities would be liable for emissions obligations arising from those facilities or activities under the scheme.

- Where multiple entities exercise a degree of operational control over a covered facility or activity, a single responsible entity would be required to register and meet scheme obligations.
- For corporations, obligations would be placed on the controlling corporation of a company group where either the controlling corporation or a member of the group has operational control over a covered facility or activity.
- Unincorporated entities would also be liable under the scheme if they have operational control over a covered facility or activity.

Further consultation and analysis would be undertaken on the definition of liable entities under the scheme in relation to the forestry sector, and upstream fuel suppliers (for example, to align scheme obligations with fuel excise and customs duty liability).

5.3 Emissions estimation methodologies under the scheme would be those available under the National Greenhouse and Energy Reporting System.

5.4 Noting the four classes of methodologies available for NGERS, where Method 2 (see Box 5.1) or above is already in widespread use for a source, those methodologies would be imposed as the minimum to be used from the commencement of the scheme.

The following sources would have minimum standards for emissions estimation methodologies imposed from the commencement of the scheme:

- electricity sector emissions (as required for the National Greenhouse and Energy Reporting Scheme and the Generator Efficiency Standards program)
- perfluorocarbon emissions (from aluminium production, as is current business practice and used for the National Greenhouse Accounts)
- fugitive emissions from underground coal mines (as currently mandated by state safety regulations for the large majority of mines).

Staged increases in the accuracy of emissions estimates over time would be pursued by imposing increasing minimum standards for estimation methodologies, where this is cost effective for the scheme overall.

Additional sources would be investigated for the possible imposition of minimum standards for emissions estimation methodologies soon after the commencement of the scheme, but not in the first two years of the scheme. Sources that may warrant investigation include:

- emissions from coal use (non-electricity, such as steel production)
- waste sector emissions
- natural gas combustion emissions (non-electricity)
- fugitive emissions from open-cut coal mines.

5.5 Further consultation and analysis would be undertaken to establish appropriate reporting requirements and emissions estimation methodologies relating to the obligations of upstream fuel suppliers under the scheme.

5.6 Consistent with adjustments to the scheme trajectory, five years notice would be given before major revisions of emissions estimation methodologies that affect the majority of stakeholders.

Consultation would be undertaken and appropriate notice would be given before imposing or increasing minimum standards for emissions estimation methodologies.

5.7 Noting the four classes of methodologies available for NGERS, where an entity has elected to use Method 2 (see Box 5.1) or above for a particular source, that methodology would be the minimum standard for that entity for a period of four years.

The scheme regulator may grant exceptions to this rule in some circumstances.

5.8 Provisions relating to documentation and record keeping under the scheme would be based on those set out for the National Greenhouse and Energy Reporting System.

5.9 A single report would be sufficient to satisfy an entity's obligations under both the National Greenhouse and Energy Reporting System and the Carbon Pollution Reduction Scheme, with reports to be submitted by 31 October each year.

Emissions obligations under the scheme, the types of assessment methodologies used and any uncertainty estimates reported by liable entities would be published by the Government on the internet as soon as is feasible after reports are submitted.

5.10 Large emitters (those with obligations under the scheme of 125,000 tonnes of carbon dioxide equivalent or more) would be required to have their annual emissions reports assured by an independent accredited third party prior to their submission. The Government would consider the need to extend this requirement on the basis of initial experience, developments relating to international linking and the compliance burdens likely to be placed on small entities.

The scheme regulator would have powers to conduct assurance audits using a risk-based approach for all emissions reports submitted under the scheme, as is the current approach under the National Greenhouse and Energy Reporting System.

The regulator would also have the power to review an annual emissions report for up to four years after its submission, except in the case of fraud, in which case the period would be unlimited.

The Government would investigate further the scope to align financial and emissions reporting and verification systems.

5.11 Assurance under the Carbon Pollution Reduction Scheme would be carried out in accordance with guidelines made under the *National Greenhouse and Energy Reporting Act 2007* and standards produced by the Australian Government's Auditing and Assurance Standards Board.

All third-party assurance providers would be accredited to ensure the development of a pool of properly trained and qualified providers. The form and nature of accreditation (including whether it is conducted by the Government or a non-government body) would be determined after further consultation, with a view to minimising compliance costs.

5.12 The scheme would operate on a financial-year basis.

5.13 The final date for the annual surrender of permits would be a fixed time after the final date for emissions reporting. At scheme commencement, this period would be six weeks.

5.14 Liable entities would be allowed to surrender permits at any time before the annual surrender deadline to meet their end-of-year obligations (any permits surrendered would not be available for future compliance periods).

Any entity or individual would be allowed to voluntarily surrender permits regardless of whether they have obligations under the scheme.

5.15 The regulator would be given a range of compliance, investigative and enforcement powers, and a broad range of mechanisms to respond proportionately to non-compliance under the scheme.

The emissions trading regulator would be able to exchange information with relevant Australian Government, state and territory governments, and international regulators.

Compliance and enforcement provisions, including penalties, would be finalised over the remainder of 2008.

6. Linking the scheme to international markets

6.1 The scheme would be designed so that it can link with international markets and schemes, with a preference for open trade within an effective global emissions constraint.

All targets for the scheme, as well as the commitment to reduce national emissions by 60 per cent below 2000 levels by 2050, will be defined in terms of net national

emissions that is, imported units would be counted towards our national target, and exported units would be excluded from the national target.

Any restrictions placed on linking would be to ensure:

- the stability and ongoing credibility of the scheme
- the environmental integrity and effectiveness of the scheme
- the scheme's consistency with international objectives and obligations.

6.2 A carbon pollution permit (which would be referred to in the legislation as an Australian emissions unit) would be created for the scheme, and it would be distinct from Australia's international (Kyoto Protocol) units.

6.3 Subject to restrictions, the scheme would link internationally via the Kyoto Protocol's flexibility mechanisms in the early years of operation.

6.4 The Government believes the short-term priority is to minimise implementation risk while the scheme is being established. This includes promoting price stability and predictability in the early years of the scheme.

Liable entities would be able to meet their obligations by using eligible Kyoto units for compliance in the scheme, limited to a maximum percentage of each entity's obligation (for the period 2010–11 to 2012–13).

6.5 No assigned amount units would be accepted for compliance in the scheme (for the period 2010–11 to 2012–13). This position would be reviewed in the light of international developments.

6.6 Emission reduction units created under the Kyoto Protocol's joint implementation mechanism would be recognised for compliance purposes in the scheme (for the period 2010–11 to 2012–13).

6.7 Removal units would be recognised for compliance purposes in the scheme (for the period 2010–11 to 2012–13).

6.8 Certified emission reductions generated by the Kyoto Protocol clean development mechanism would be accepted (for the period 2010–11 to 2012–13), with the exception of those that have associated contingent obligations and high administrative costs: currently, temporary certified emission reductions and long-term certified emission reductions from forestry-based projects.

6.9 Certified emission reductions and emission reduction units generated in the first Kyoto Protocol commitment period would be recognised for compliance in the scheme in 2012–13 and in subsequent years, in accordance with the rules set out in the protocol and any restrictions that apply to the use of international units set out in the Australian scheme.

Certified emission reductions generated through abatement from 2013 onwards by projects established in the first commitment period would be recognised for compliance in the scheme in 2012–13 and subsequent years, in accordance with the rules set out in the protocol and subject to any restrictions that apply to the use of international units set out in the Australian scheme.

6.10 International non-Kyoto units would not be accepted for compliance in the scheme. This position would be reviewed for the post-2012–13 period in the light of future developments in international negotiations.

Australia would continue to support the development of robust internationally accepted methodologies for reductions from deforestation and forest degradation in developing countries, noting that these are currently not recognised under the clean development mechanism.

6.11 In order to facilitate a smooth start to the scheme and to minimise implementation risks, the Government would not allow Australian permits to be converted into Kyoto units for sale in and transfer to international markets in the early years of the scheme.

6.12 Australia would not host joint implementation projects in sectors that are covered by the scheme.

Decisions on joint implementation projects for uncovered activities would be aligned with decisions on domestic offsets.

The scheme would not include domestic offsets (and therefore joint implementation) from agricultural emissions during the period before decisions relating to coverage of that sector's emissions.

In 2013, the Government would consider the scope for offsets (and joint implementation) in sectors that cannot be included in the scheme.

Australia would not host joint implementation projects before the start of the scheme.

6.13 The Government would provide the maximum feasible level of certainty about future linking arrangements, consistent with retaining enough flexibility to respond to changing international arrangements.

The Government would:

- at the end of 2008, in the context of the white paper, determine and announce the quantitative limits on the use of Kyoto units by liable entities for the period from 2010–11 to 2012–13, in conjunction with decisions on the national trajectory and scheme cap
- in early 2010 confirm quantitative limits that might apply to the use of Kyoto units for five years up to and including 2014–15
- extend the certainty over quantitative limits that might apply on the use of Kyoto units thereafter by one year, every year
- at the end of 2008, in the context of the white paper, confirm the types of Kyoto units that will be recognised for compliance in the scheme for the period 2010–11 to 2012–13
- in early 2010 confirm the types of Kyoto units that will be recognised for compliance in the scheme for five years up to and including 2014–15

- extend the certainty on the types of Kyoto units that will be recognised for compliance thereafter by one year, every year
- at the end of 2008, in the context of the white paper, confirm restrictions on the conversion of Australian permits into Kyoto units for sale and transfer to other countries for the period 2010–11 to 2012–13
- in early 2010 announce any provisions and relevant restrictions that might apply to the conversion, sale and transfer of units to other countries for the period 2012–13 to 2014–15
- extend the certainty on provisions and relevant restrictions that might apply to the conversion, sale and transfer of units to other countries thereafter by one year, every year.The Government would provide the maximum feasible level of certainty about future linking arrangements, consistent with retaining enough flexibility to respond to changing international arrangements.

6.14 Linking arrangements would be subject to review in the light of ongoing international negotiations and market development, with a clear preference for relaxing restrictions on linking with credible schemes and mechanisms as the Australian scheme matures.

The Government would investigate on a case-by-case basis more direct bilateral linking opportunities (including mutual recognition of compliance units and harmonisation) with the schemes of other countries, after the scheme has been established.

7. Auctioning of Australian carbon pollution permits

7.1 Allocations would, over the longer term, progressively move towards 100 per cent auctioning as the scheme matures, subject to the provision of transitional assistance for emissions intensive trade-exposed industries and strongly affected industries.

7.2 The relevant minister would direct the regulator in the early phase of the scheme.

The scheme regulator would later assume all auction policy responsibilities.

The responsibilities of the scheme regulator, auction design, and the relevant minister's power of direction would be reviewed at the five-year review.

7.3 Four auctions would be held each financial year, one in each quarter. The Government seeks stakeholder feedback on the relative risks of alternative models, such as annual or weekly auctions.

7.4 At least one auction of the relevant year's vintage would be held after the end of the financial year in the lead-up to the relevant surrender date. A suggested date would be within one month prior to the acquittal date.

7.5 The first auction would take place as early as is feasible in 2010, prior to the start of the scheme.

7.6 Four years of vintages would be auctioned (current vintage plus advance auction of three future vintages).

7.7 The advance auction of future year vintages would occur once each year.

7.8 Subject to the lodgement of any required security deposit, universal participation would be permitted at auctions.

7.9 Ascending clock auctions would be used for single vintage auctions, and simultaneous ascending clock auctions would be used for multiple vintage auctions.

7.10 Only those entities that receive free permit allocations would be allowed to sell them through double-sided auctions in the early phase of the scheme.

8. Household assistance measures

8.1 The Government has committed that every cent raised for the Australian Government from the Carbon Pollution Reduction Scheme will be used to help Australians – households and business – adjust to the scheme and to invest in clean energy options.

8.2 The Government is also committed to providing low-income households with increases in assistance through the tax and payment system and all households with other assistance to address the impact on their living standards. It is committed to:

- Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and provide other assistance to meet the overall increase in the cost of living flowing from the scheme.
- Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme.
- Provide assistance to middle-income households to help them meet any overall increase in the cost of living flowing from the scheme.
- Review annually in the Budget context the adequacy of payments to beneficiaries and recipients of family assistance to assist households with the overall impacts of the scheme, noting that these payments are automatically indexed to reflect changes in the cost of living.
- Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills so that all can make a contribution.

8.3 The Government has indicated in the terms of reference for Australia's Future Tax System Review that it is to consider the interrelationships between the tax and transfer payment systems and the scheme.

9. Assistance for emissions-intensive trade-exposed industries

9.1 The key rationales for providing assistance to emissions-intensive trade-exposed (EITE) industries would be to:

- address some of the competitiveness impacts of the scheme on EITE industries in order to reduce carbon leakage
- provide transitional support to EITE industries that will be most severely affected by the introduction of a carbon constraint
- support production and investment decisions that would be consistent with a global carbon constraint.

The Government's support for EITE industries would be balanced against its objectives for non-assisted sectors and households.

EITE assistance would be adjusted over time to ensure that all parts of the economy contribute to the objective of reducing emissions.

The EITE assistance policy would be reviewed at each five-year scheme review to determine whether that assistance continues to be consistent with the rationale for assistance, appropriately balances the competing policy objectives and continues to be consistent with Australia's international trade and climate-change obligations.

9.2 The proposed assistance would be provided to emissions-intensive trade-exposed industries in the form of free allocations of carbon pollution permits at the beginning of each compliance period, contingent on production.

9.3 The proposed emissions-intensive trade-exposed assistance would be provided on the basis of the industry-wide emissions from a process or activity to ensure that assistance is well targeted and is equitable both within and between industries.

9.4 Emissions-intensive trade-exposed (EITE) assistance would be provided for the direct and indirect electricity emissions associated with the activity or process.

Only emissions covered by the scheme would be considered in determining EITE assistance.

A measure of emissions per unit of revenue would be the most transparent and comparable indicator of the materiality of the carbon cost impact across different traded industries.

9.5 All industries, other than those for which there exists a physical barrier to trade, would be considered for emissions-intensive trade-exposed assistance.

9.6 Up to around 30 per cent of Australian carbon pollution permits would be freely allocated to emissions-intensive trade-exposed (EITE) activities. At the outset of the scheme, if agricultural emissions are excluded from scheme coverage, this would be up to around 20 per cent of permits.

Eligibility for EITE assistance would be based on the industry-wide emission intensity of an activity or process being above a threshold of about 1,500 tonnes carbon dioxide equivalent (CO_2-e) per million dollars of revenue.

Initial assistance would cover around 90 per cent of emissions for EITE activities that have emissions intensities above about 2,000 tonnes CO_2-e per million dollars of revenue and around 60 per cent of emissions for EITE activities that have emissions intensities between about 1,500 and 2,000 tonnes CO_2-e per million dollars of revenue.

These thresholds and rates of assistance may be reconsidered on the basis of further information provided through the consultation process to ensure that the total quantum of EITE assistance would be limited to around 30 per cent of permits (inclusive of agricultural emissions).

9.7 Allocations of assistance for direct emissions of new and existing emissions-intensive trade-exposed (EITE) entities would be calculated on the basis of:

- an Australian historical industry-average emissions-intensity baseline for each EITE activity
- the output of the EITE activity for each entity
- the assistance rate for that EITE activity.

Allocations of assistance for indirect electricity emissions of new and existing EITE entities would

- be calculated on the basis of
  - an Australian historical industry-average electricity-intensity baseline for each EITE activity
  - an electricity factor, where the electricity factor is determined to reflect the likely average electricity price impact of the scheme
  - the output of the EITE activity for each entity
  - the assistance rate for that EITE activity
- take into account whether the EITE entity has contractual arrangements with regard to electricity supply that would shield them from increases in electricity prices as a result of the introduction of the scheme.

If an entity ceases operating an EITE activity, it would be required to return carbon pollution permits that had been allocated to it for production that did not occur.

9.8 The emissions-intensive trade-exposed (EITE) assistance rate would be reduced over time with the intent that the share of assistance provided to the EITE sector does not increase significantly over time.

9.9 Between 2010 and 2020:

- assistance would be provided to emissions-intensive trade-exposed industries as proposed unless broadly comparable carbon constraints are introduced in key competitor economies, in which case assistance be withdrawn.

Beyond 2020:

- assistance would be withdrawn if broadly comparable carbon constraints are introduced in key competitor economies or
- assistance would be phased out over a five-year period in the event of acceptable international action that places obligations on an industry's major competitors
- assistance would be continued as proposed in the absence of broadly comparable carbon constraints or acceptable international action.

10. Assistance for strongly affected industries

10.1 The characteristics of strongly affected industries are that they must:

- be non-trade-exposed (as entities in trade-exposed industries may be eligible for assistance as emissions-intensive trade-exposed industries)
- be emissions-intensive (exceeding the threshold for eligibility proposed for emissions-intensive trade-exposed industries)
- include some entities that are emissions-intensive compared to their competitors, such that they cannot fully pass on carbon costs and could experience significant losses in asset value
- have significant sunk capital costs
- not have significant economically viable abatement opportunities available to them.

10.2 Coal-fired electricity generators are likely to be strongly affected by the scheme, based on the characteristics proposed in Section 10.1.

10.3 The Australian Government has made significant contributions to progress the commercial deployment of carbon capture and storage (CCS). These contributions, and any further support, should recognise the technical and institutional hurdles to the development and deployment of carbon capture and storage technologies, and reflect Australia's significant domestic and international interests in the development of this technology.

10.4 The Government would address particular impacts of the scheme on workers, communities and regions. Assistance would:

- take into account the existence of generally applied measures that assist structural adjustment in all sectors (such as social security and employment policies)
- be provided where a clear and sizable burden has been, or is highly likely to be, imposed on an identifiable segment of the community

- be designed to assist the adjustment of workers, communities and regions to their new circumstances, rather than to prevent or hinder that adjustment
- apply, as necessary, regardless of whether an affected industry has received support as a strongly affected or emissions-intensive trade-exposed industry.

10.5 To ameliorate the risk of adversely affecting the investment environment, the Government proposes to provide a limited amount of direct assistance to existing coal-fired electricity generators.

10.6 Final decisions on an appropriate quantum of the proposed direct assistance for coal-fired electricity generators would be made after the medium-term national target range is established.

10.7 Eligibility for the proposed direct assistance for coal-fired electricity generators would be limited to those assets that were 'in existence' as of 3 June 2007, that is, assets that:

- were in operation

or

- satisfied the National Electricity Rules criteria for a 'committed project'.

10.8 The proposed direct assistance for coal-fired electricity generators would be allocated to individual recipients using a simple asset-by-asset method.

10.9 The proposed direct assistance for coal-fired electricity generators would be allocated to individual recipients using a simple asset-by-asset method that involves:

- the available assistance being split into separate pools, with one pool being made available to brown coal-fired assets and the other to black coal-fired assets
- assistance in each pool being allocated to individual assets in direct proportion to the capacity of each asset.

10.10 The quantum of the proposed direct assistance for coal-fired electricity generators would be determined 'up front'—that is, before the scheme begins. However potential recipients will need to submit to a review process to minimise any prospect of windfall gains.

10.11 The proposed direct assistance for coal-fired electricity generators would be provided on a 'once and for all' basis—that is, further allocations of assistance would not be provided after the scheme begins.

10.12 A decision on the timing of the delivery of the proposed direct assistance for coal-fired electricity generators would be made at the time the quantum of assistance is determined.

11. Tax and accounting issues

11.1 Discrete provisions of the income tax law would be developed. Such provisions would provide generally the same tax treatment to permits purchased by taxpayers who are carrying on a business or other income-earning activity as would occur under existing legislation, but would provide increased certainty and reduced complexity.

The provisions would allow a deduction for expenditure incurred on the purchase of a permit and include any proceeds from the sale of a permit in assessable income.

11.2 The cost of acquiring a permit would be deductible at the time the permit is acquired.

If the permit is banked, the effect of the deduction would be deferred until the time the permit is surrendered or sold.

Any proceeds received on the sale of a permit would be treated as assessable income.

11.3 The effect of deferring a deduction for the purchase of a permit would be achieved through a rolling balance method, under which the value of permits held at the beginning and end of the income year would be taken into account.

11.4 The value of free permits would be included in the taxpayer's assessable income in the year the permits are received.

11.5 The value of a cash grant given to a liable entity as assistance under the scheme would be included in their assessable income in the income year it is received.

11.6 Scheme transactions would be treated under the normal GST rules. This would ensure that scheme transactions would receive the same treatment as similar transactions in the broader economy. It would also be consistent with the underlying principles of the GST, including its broad-based nature, minimise compliance costs for entities and avoid complexity in the law.

The treatment of permits under the normal rules would generally not lead to embedded GST for registered entities and, from a GST perspective, those entities would be indifferent as to whether permits were auctioned or free.

12. Transitional issues

12.1 To assist business more generally, the Government proposes to establish the Climate Change Action Fund. This Fund will focus predominantly on those industries not receiving free permit allocation, but which nevertheless need assistance to adjust to the carbon price.

12.2 State and territory governments are encouraged to discontinue their market-based programs once the Carbon Pollution Reduction Scheme commences, as this is consistent with the Council of Australian Governments' complementary measures and streamlining agenda. The Government will continue to work cooperatively with the New South Wales, Australian Capital Territory and Queensland governments to assist them in their development of appropriate transitional arrangements.

12.3 A program for allocating early action credits would not be established.

13. Governance arrangements and implementation

13.1 Elected representatives (the Parliament and the Government, acting through the responsible minister) would be given responsibility for policy decisions with significant and far-reaching implications, and an independent regulator would be responsible for decisions that are essentially administrative in nature or that involve individual cases.

The guiding approach to governance arrangements would be to provide as much certainty and predictability for regulated entities and the market as is practicable, while retaining a legitimate degree of flexibility for the Government to adjust the scheme in response to changed circumstances.

13.2 A non-binding reference to the medium- and long-term national targets would be included in the objects clause of the Act establishing the scheme. Factors that the Government may consider when making decisions about the national targets over time could also be set out in the objects clause.

The scheme caps and gateways would be set out in delegated legislation.

13.3 The broad principles of industry assistance would be set out in the establishing Act. Further detailed criteria for determining eligibility and the quantum of assistance would be set out in delegated legislation. This would be administered by the regulator, which would have a high level of operational independence in determining individual cases in accordance with the legislatively prescribed criteria.

13.4 The Act establishing the scheme would set out a broad framework for monitoring, facilitating and enforcing compliance. The regulator would then be given responsibility for ensuring compliance by liable entities and, to that end, be given a range of compliance, investigative and enforcement powers, with the flexibility to select from a set of graduated options to respond proportionately to noncompliance.

13.5 An independent expert committee would be constituted every five years to conduct public strategic reviews of the scheme. The responsible minister would be provided with the power to bring forward a review. More frequent 'care and maintenance' reviews may be necessary in the early years of the scheme to assess the operation of administrative arrangements. To improve market certainty, the scope of those early reviews would be tightly defined.

13.6 The scheme would be implemented through unitary Commonwealth legislation. States and territories will be informally engaged as part of ongoing cooperation and coordination on climate change policy through the Council of Australian Governments.

13.7 The scheme regulator would be given a high level of operational independence to implement the emissions trading legislation and apply it to individual cases. The regulator would be accountable to the responsible minister and subject to ministerial directions of a general nature only.

13.8 The regulator would be required to report on its operations each financial year to the responsible minister for presentation to the Parliament. The regulator's decisions would be subject to sound appeals processes, including judicial review pursuant to the *Administrative Decisions (Judicial Review) Act 1977* and merits review by the Administrative Appeals Tribunal.

13.9 The regulator would be established as an incorporated body subject to the *Financial Management and Accountability Act 1997*. The regulator would have a commission structure with a number of statutory office-holders appointed by the responsible minister.

13.10 The Government will assess the potential for consolidating the Greenhouse and Energy Data Officer, the Renewable Energy Regulator and the proposed scheme regulator.

1. Framework for the Carbon Pollution Reduction Scheme

The Australian Government's intention is to commence an emissions trading scheme – the Carbon Pollution Reduction Scheme – in 2010. This chapter outlines a framework for consideration of design options for the scheme, and sets out the process for stakeholder consultation.

Climate change involves profound challenges. Climate change has the potential to fundamentally re-shape our social, environmental and economic landscapes – affecting in particular our water supply, agricultural industries, coastal zones and natural heritage.

Climate change is a by-product of industrialisation and a consequence of our economic success. Environmental damage is caused by greenhouse gas emissions.

There are six greenhouse gases included under the Kyoto Protocol.[1] The strength of the greenhouse effect– or 'global warming potential'– of each gas is different. The most common greenhouse gas is carbon dioxide and by convention other greenhouse gases are converted to a carbon dioxide equivalent (CO_2-e), taking into account their internationally agreed global warming potentials.

The emissions are a form of carbon pollution yet those who generate the pollution are not held accountable for the costs they impose on us all. The resulting environmental degradation is not currently reflected in the costs of business or the price of goods and services – because firms face no cost from increasing emissions, the level of emissions is greater than is desirable. Unless businesses and individuals bear the full responsibility for their consumption and production decisions, the level of carbon pollution will remain too high. The scheme is designed to redress this market failure. Emissions trading is simply a mechanism to achieve an objective. That objective is to reduce carbon pollution, and to do so efficiently, by putting a cap on emissions. The Government is therefore referring to the measure as the Australian Carbon Pollution Reduction Scheme.

Addressing this market failure will involve significant economic reform. Tackling climate change will not be easy, and there will be adjustment costs. However, this is not a choice between a no-cost option and an option with costs. It is a choice between taking responsible action now – or neglecting to act and facing much higher costs and more serious climate change later.

Australia's future economic prosperity will depend in large part on how effectively we manage the transition to a carbon-constrained world. Economic reform is necessary to improve our carbon productivity – to increase our output per unit of carbon emitted – just as previous economic reforms improved the productivity of our labour and of

capital. The nations that are the most open and adaptive are those most likely to prosper in the long term.

The Government's intention is to introduce the Carbon Pollution Reduction Scheme in 2010. The scheme will form the centrepiece of Australia's efforts to reduce greenhouse gas emissions, and to improve our carbon productivity.

There has been a policy debate in Australia regarding emissions trading schemes for several years. In developing the green paper, the Government has taken into account the work of the Garnaut Climate Change Review, the Task Group on Emissions Trading (TGET) and the National Emissions Trading Taskforce (NETT) (Box 1.1), as well as the extensive stakeholder input into these processes.

The Government has also consulted with the states and territories through a working group of the Council of Australian Governments.

The Department of Climate Change has also convened a series of roundtables involving peak industry, non-government and land use organisations. These were complemented by an extensive program of bilateral meetings held to discuss specific issues.
See Appendix B for an overview of the consultation process.

The green paper builds on this body of work and sets out a proposed design for the Carbon Pollution Reduction Scheme. It identifies a range of options, carefully assesses their merit, identifies any remaining information gaps and in doing so, outlines the preferred policy positions and, in some cases, the Government's disposition, as a basis for further public consultation.

Preferred positions represent the Government's current thinking on key aspects of the architecture of the scheme. Preferred positions should not be interpreted as statements of the Government's final policy intent, but as preferences based on the available information. The Government has indicated only a disposition towards some policy positions because it does not have sufficient information to arrive at a preferred position.

The Government is aware of the economic reform significance of the Carbon Pollution Reduction Scheme. Accordingly the Government intends to adopt a very careful and methodical process for finalising the design elements of the scheme.

Stakeholder feedback is invited on all aspects of this green paper, and that feedback will inform the Government's final decisions on scheme design. These decisions will be reflected in a white paper and an exposure draft of the legislation, to be released for consultation in December 2008.

This chapter outlines the framework that has been used to assess design options for the scheme, and sets out the process for stakeholder consultation. Specifically in this chapter:

- section 1.1 provides the policy context for the design of the scheme
- section 1.2 explains how a 'cap and trade' emissions trading scheme works
- section 1.3 considers how best to manage the adjustment to a carbon constrained economy
- section 1.4 considers climate change measures to complement the scheme

- section 1.5 sets out the objective of the Carbon Pollution Reduction Scheme
- section 1.6 describes the criteria that are used for assessing different design options
- section 1.7 outlines the structure of this green paper
- section 1.8 sets out the process for stakeholder consultation
- section 1.9 outlines the process for making submissions

Box 1.1
Previous policy processes that relate to the emissions trading scheme

Garnaut Climate Change Review

The Garnaut Climate Change Review is an independent study by Professor Ross Garnaut, which was commissioned by Australia's Commonwealth, state and territory governments. The Review was established on 30 April 2007 and will deliver its Final Report to Australian governments by 30 September 2008. A *Draft Report – June 2008* was provided to the Government on 30 June 2008 and released publicly on 4 July 2008.[2]

The Garnaut Climate Change Review released an Emissions Trading Discussion Paper on 20 March 2008, putting forward for community discussion a set of principles and design features for the delivery of an efficient and effective emissions trading scheme. Submissions on the discussion paper closed on 18 April 2008.

More information on the Review, including discussion papers and its interim report can be found at: http://www.garnautreview.org.au

The Task Group on Emission Trading

The TGET was established in December 2006 by the previous Government as a joint government-business task group to provide advice to the Government on the nature and design of a workable global emissions trading system in which Australia would be able to participate; and to report on additional steps that might be taken in Australia consistent with the goal of establishing such a system.[3] The Task Group's final report was delivered to Government in June 2007 and is available at: http://www.climatechange.gov.au/emissionstrading/index.html

The National Emissions Trading Taskforce

The NETT was established by state and territory governments in 2004 to develop a model for a national emissions trading scheme. The Taskforce developed an agreed model for an emissions trading scheme following in-depth stakeholder consultation.[4]

The NETT's final report was delivered to state and territory governments in December 2007 and is available at: http://www.climatechange.gov.au/emissionstrading/index.html

Further information about the NETT can be found at: http://www.emissionstrading.nsw.gov.au/

1.1 The policy context

1.1.1 Climate Change Impacts

Throughout 2007, the Intergovernmental Panel on Climate Change (IPCC) released three Working Group Reports and a Synthesis Report as part of its Fourth Assessment Report, the latest of its six-yearly major reviews and updates of the science of climate change.

The science of climate change presented in the IPCC's Fourth Assessment Report in 2007 paints a clear picture: warming of the climate system is unequivocal, as evident from a wide range of measurements. Numerous other changes in climate have been observed in wind patterns, precipitation, sea ice, ice sheets, and in aspects of extreme weather. It is very likely that greenhouse gas increases related to human activity have caused most of the rise in global mean temperature since the mid-twentieth century. [5]

New data and scientific understanding, unavailable in time for last year's IPCC report, are starting to paint an even more worrying picture of climate change.

The Garnaut Review's Draft Report of June 2008 suggests that emissions are tracking at the upper bounds of the scenarios modelled by the IPCC. Recent research suggests that the rate and magnitude of climate change over the next century may be at the high end of the range estimated by the IPCC. Global mean temperature and sea-level rise are tracking at the upper end of the range of projections.[6] There is also increasing concern about the stability of the Greenland and West Antarctic ice sheets, with implications for sea-level rise.[7]

If emissions continue to increase at the current rate, the concentration or stock of greenhouse gases in the atmosphere will be around 1000 part per million (ppm) of carbon dioxide equivalent (CO_2-e) in the second half of the century compared to 384 ppm in 2005 and 280 ppm in pre-industrial times.[8] Such a concentration is expected to have severe impacts on our environment.

1.1.2 Australia's dual vulnerability to climate change

Australia is vulnerable to both the impacts of climate change, and the repercussions of poorly designed policy responses to address it.

Impacts of climate change in Australia

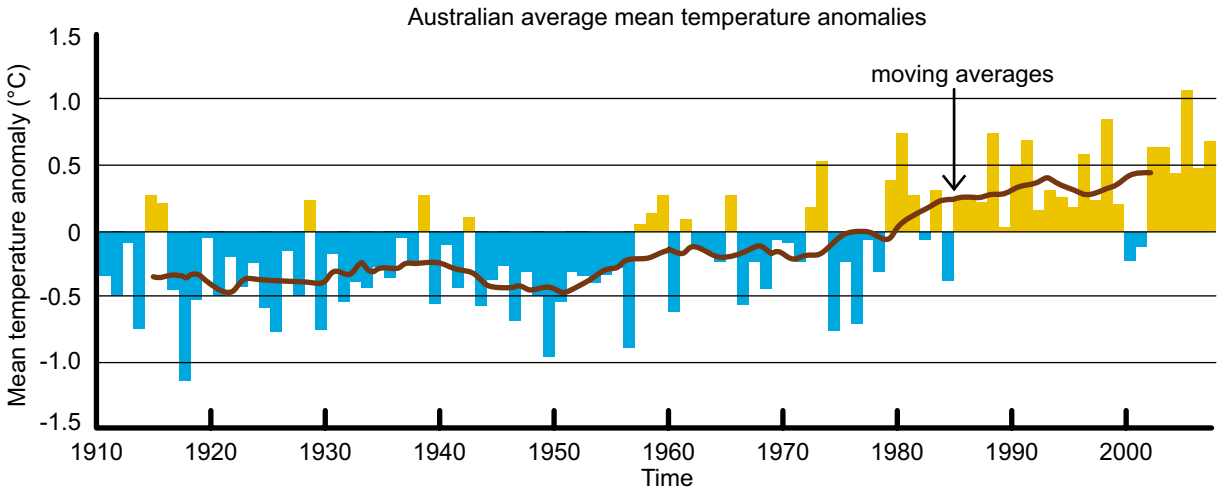
Under a high emissions scenario, average temperatures across Australia are expected to rise by up to 5 degrees by 2070. The IPCC concluded that Australia's water resources, coastal communities, natural ecosystems, energy security, health, agriculture and tourism would all be vulnerable to climate change impacts if global temperatures rise by 3 degrees or more.[9]

While climate change is usually thought of as involving incremental change, in reality for many locations the main risk from climate change will be an increase in damage from specific events, such as severe storms, heatwaves, intense cyclones, drought and fire. [10]

Climate change impacts are not necessarily linear or simply predictable. For a number of systems there are thresholds above which consequences quickly become critical or the damages become exponential; for example, coral bleaching when surface sea warming exceeds a coping threshold, and toxic algal blooms when temperatures increase in waterways.[11] In our built environment, a 25 per cent increase in wind gust speed can lead to a 550 per cent increase in damage costs for buildings, with risks to human safety, largely because building or engineering standards have been exceeded.[12]

Changes in Australia's climate and effects on human and natural systems are observable already, and the magnitude of impacts will grow as the climate continues to change in decades ahead. Annual average temperature in Australia has increased by 0.9°C since 1910 – see Figure 1.1. The black line shows the 10-year trailing average.

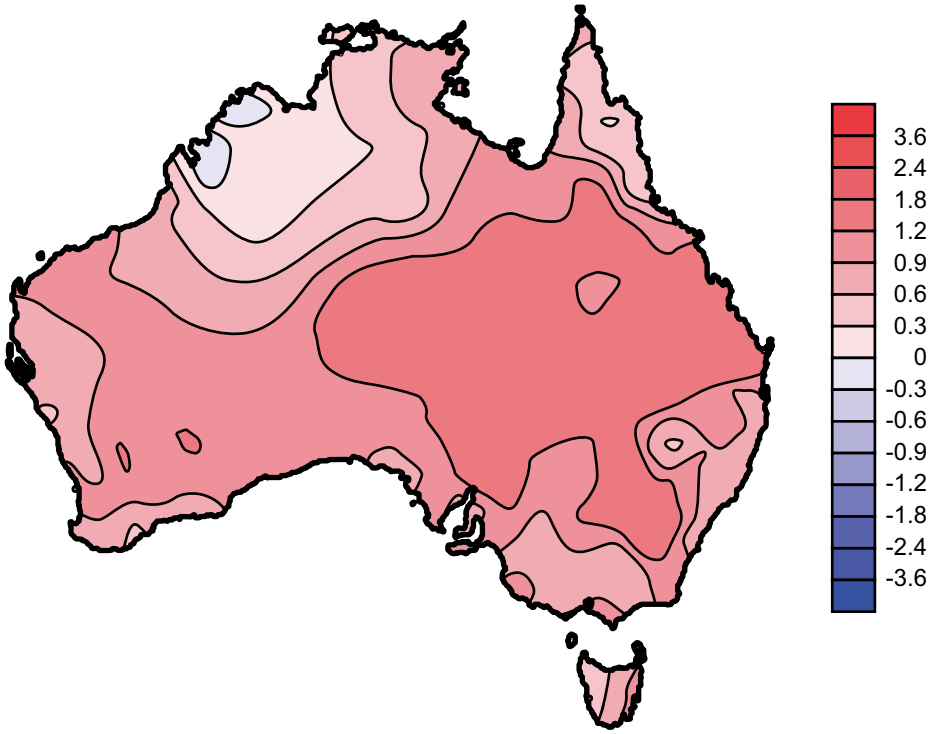
Figure 1 Australian average mean temperature anomalies



Source: Bureau of Meteorology

The increase in temperature has not been uniform across Australia. For example, average annual temperatures have increased by 1.2°C in Queensland. Figure 1.2 shows regional trends in annual average temperatures since the 1950s.

Figure 1.2 Trend in mean temperature 1950-2007 (°C per decade)

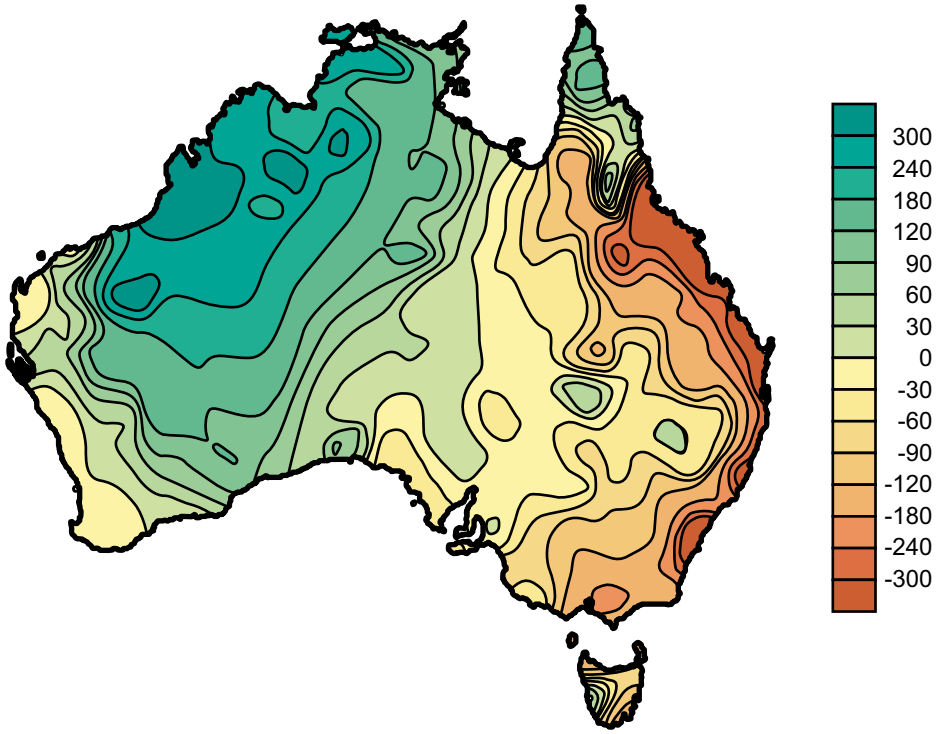


Source: Bureau of Meteorology

A recent study undertaken by the Bureau of Meteorology and the CSIRO into exceptional climatic events for the Department of Agriculture, Fisheries and Forestry found a strong tendency for more exceptionally hot years, which are projected to occur once every 1–2 years by 2010–2040 compared to once every 22 years in the period 1900–2007.

Significant changes in rainfall patterns have also been observed. Figure 1.3 below shows changes in rainfall patterns across Australia. Since the 1950s, most of eastern and southwestern Australia has become drier, while the north east of Australia has become wetter. This drying is marked by both an increase in exceptionally dry years and a near absence of very wet years, giving rise to drier soils and lower dam inflows.

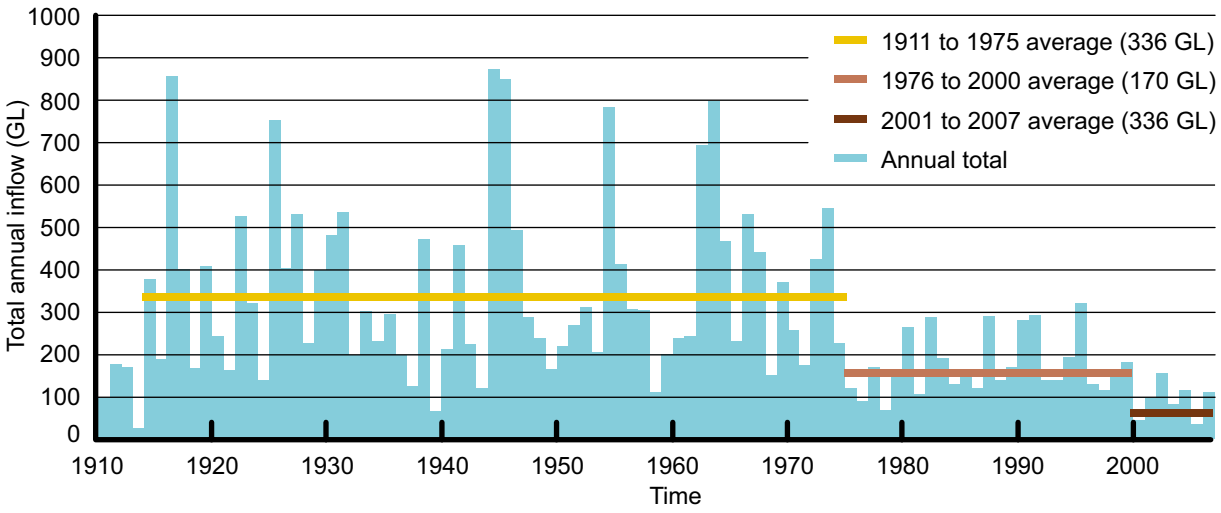
Figure 1.3 Trend in Annual Total Rainfall 1950-2007 (mm per decade)



Source: Bureau of Meteorology

Reductions in rainfall result in proportionately larger declines in the amount of water flowing into rivers and dams ('streamflow'). This effect is exacerbated by higher temperatures. In the Murray-Darling Basin, a 10 per cent change in rainfall has already resulted in a 35 per cent reduction in streamflows. Over the last decade, the average streamflows supplying water to Melbourne, Sydney, Brisbane, Adelaide and Canberra have fallen, with recent streamflows 40 to 60 per cent below the one hundred year average. For Perth, annual dam inflows in 1976 to 2000 were about half the average for 1911–1975. For 2001–2007 inflows were about a quarter of the longer term average. See Figure 1.4 below.

Figure 1.4 Annual streamflow into Perth's dams



Notes: Values represent totals for May-April

Source: Western Australia Water Corporation

Water security is already a major challenge in southern parts of the continent and the costs of meeting this challenge will be significant. Streamflows in the Murray-Darling Basin could fall by nearly 50 per cent by the end of the century. This would severely limit production from cropping and irrigated systems, and threatening aquatic ecosystems and the viability of towns and farming communities throughout the Basin. To help adapt to reduced water availability, the Australian Government is already investing $12.9 billion in a long term Water for the Future plan. The cost of water in Melbourne is expected to double over the next five, reflecting the cost of providing new water supplies. The cost of a desalination plant to supplement Perth's water supply was $387 million in 2006.

The draft report of the Garnaut Review concludes that the costs of climate change for Australia will be greater than for other developed countries. We are already one of the hottest and driest countries and we live in a region which includes many developing countries which are in a weaker position to adapt to climate change than wealthy countries with robust political and economic institutions.

The draft report of the Garnaut Review stated that by 2100 the impacts of unmitigated climate change on Australia could include:

- A 92 per cent decline in irrigated agricultural production in the Murray-Darling Basin, affecting dairy, fruit, vegetables, grains.
- Catastrophic destruction of the Great Barrier Reef, with the reef no longer dominated by corals.
- Up to a 35 per cent increase in the cost of supplying urban water, due largely to extensive supplementation of urban water systems with alternative water sources.
- Significant risk to coastal buildings from storm events and sea-level rise, leading to localised coastal and flash flooding and extreme wind damage.

- An increase in heat-related deaths in Queensland each year and a rise in the number of Australians exposed to Dengue virus.
- Further strain on fragile states in our Asia–Pacific region.[13]

Our exposure to climate change impacts is increasing as a consequence of current decisions. The Australian trend toward coastal living means that the community's exposure to extreme climatic events such as tropical cyclones and storm surges will continue to increase. Around 80 per cent of Australians now live in coastal areas – and these numbers are growing fast. There have been major developments and expansions of settlements in areas known to be subject to a high risk of flooding – the Gold Coast area is one example. Australia wide there are around 711,000 addresses with buildings within three kilometres of the coast and less than six metres above sea level. [14] Managing the risks arising from these decisions and developments may be beyond the capacity of individual agencies or local councils.

Australia's scientific research base can help human systems adjust to some degree of climate change. Recent ABARE research highlights that the 'adaptive capacity' of our agricultural industries can aid that adjustment and reduce the potential vulnerability to, and cost of, climate change – but this adaptation will be far from costless.[15]

Moreover, as the IPCC points out, our diverse natural systems, including those underpinning agriculture and fisheries, are highly exposed to long-term climate changes. These systems have limited capacity to adapt to climate change. Areas particularly at risk include the Wet Tropics and Kakadu wetlands, alpine areas, and tropical and deep-sea coral reefs including the Great Barrier Reef.[16]

Impact of policy responses to climate change

Australia's economic growth is underpinned by rapidly expanding developing economies, particularly in the Asia–Pacific region, driving international demand and higher prices for our abundant mineral resources, including coal, iron ore, bauxite, alumina, and uranium (see table 1.1). Australia is a net energy exporter, with the sector growing by an average 5 per cent a year in real terms over the past two decades, to $38 billion in 2006–07 representing 3.8 per cent of GDP.[17]

Table 1.1 Change in prices of export commodities

Commodity	Share of total exports	Change in price between 2002-03 and 2006-07 (per cent)
Coal [a]	10.1	94.5
Iron ore	7.2	163.9
Crude petroleum	3.5	126.4
Aluminium ores (incl. alumina)	2.9	39.9
Aluminium	2.9	97.9
Natural gas (LNG) [b]	2.4	3.1
Bovine meat	2.3	39.6
Copper	1.5	345.3
Wool	1.3	-17.6
Wheat	1.2	32.5
Zinc	0.8	373.8
Nickel	0.7	394.7

[a] The change in price for coal is for thermal coal only;
[b] The change in price for LNG is the calculated change in value of exports per tonne of LNG. This may make the price change in LNG look smaller than may actually be the case.

Source: Department of Foreign Affairs and Trade, *Composition of Trade Australia 2006–07*; Australian Bureau of Agriculture and Resource Economics, *Australian Commodities*, September Quarter 2007

Australia's economic growth has boosted domestic living standards and consumption, including the consumption of energy. Australia is the world's ninth largest consumer of energy on a per capita basis, and this consumption is projected to grow by an average of 1.6 per cent per annum until 2030. Australia is heavily reliant on brown and black coal for energy. In 2005–06, black and brown coal accounted for 42 per cent of primary energy consumption (and, according to ABARE, 75.6 per cent of electricity generation), while renewable energy sources represented five per cent.[18]

Australia's strong reliance on emissions intensive energy resources means that we could also be vulnerable to poorly targeted mitigation responses by other countries, such as trade measures. Australia has a strong interest in promoting broad-based, market responses to climate change because these allow abatement to happen where and when it is most cost effective, for example through improving overall energy efficiency.

By contrast, regulatory approaches often target the more obvious causes of climate change, leaving untapped more cost-effective forms of abatement. Such approaches could have a disproportionate effect on a country such as Australia which has major fossil fuel reserves. Regulatory approaches alone are likely to increase overall abatement costs, making it more difficult to achieve an effective global response to climate change.

Australia should also seek an international climate change framework which accounts for our particular national circumstances. It is likely that developed countries will be expected to collectively contribute more than any global average figure to the global emissions reduction effort. Our national social and economic characteristics, especially

our growing population and relatively emissions-intensive economy, mean that we will have higher adjustment costs than many other countries to reach ostensibly similar goals. These costs should be considered in shaping the pace of Australia's effort.

1.1.3 The Government's climate change strategy

Given the risks that climate change poses to Australia, it is in our national interest to help forge an effective global response to climate change and to begin the transformation that will deliver a safe society, a strong economy, high living standards and growing job opportunities into the future.

The Government's climate change policy is built on three pillars:

- reducing Australia's greenhouse gas emissions
- adapting to climate change that we cannot avoid
- helping to shape a global solution.

Domestic mitigation will be a significant focus through 2008; Australia's ability to reduce its own national emissions will strengthen Australia's ability to influence international negotiations and help position our economy in the longer-term to operate competitively in a low carbon world. The Government has committed to reducing Australia's emissions by 60 per cent from 2000 levels by 2050 and to introduce an emissions trading scheme to achieve this target at least cost.

Domestically, the science tells us that some degree of climate change is now unavoidable.[19] Australia must adapt to safeguard our economy, society and ecosystems. Policy responses such as the $200 million Great Barrier Reef Rescue Plan and for the long term, $12.9 billion Water for the Future plan have been important first steps.

The science clearly demonstrates that the only solution to climate change is a global one; hence the need for Australia to engage actively in helping to shape an effective global solution. Australia's determination to make the transition to a low-carbon pathway while maintaining high standards of living helps sustain the international argument for stonger global action to reduce emissions. Current international negotiations are focused on the lead-up to the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties in Copenhagen in December 2009, when, consistent with the Bali Road Map, parties aim to agree on a post-2012 international framework.

Pillar 1: Reducing Australia's greenhouse gas emissions

Given Australia's economic circumstances and high degree of vulnerability to climate change, the Government's approach to domestic mitigation is designed to:

- transform our economy, putting it on a low-emissions path; and
- build Australia's international credibility and strengthen our ability to influence international discussions towards an effective global solution.

The Government's commitment to a national emissions reduction target of 60 per cent of 2000 levels by 2050 has provided leadership and clear direction for the national effort.

To help achieve this target, the Government has committed to introducing an emissions trading scheme and earlier this year outlined a number of design elements that would guide its design (see Box 1.2).

Box 1.2
Key design elements

The Australian Government has indicated the design elements that will guide the design of the Carbon Pollution Reduction Scheme:

- The scheme will be a 'cap and trade' scheme.
- Scheme caps will be designed to place Australia on a low-emissions path in a way that best manages the economic costs of transition and provides incentives to develop and invest in low-emissions technologies while ensuring Australia's ongoing economic prosperity.
- The scheme will have maximum coverage of greenhouse gas emissions and industry sectors, to the extent that this is practical.
- The scheme will be designed to enable international linkages while suiting Australian economic conditions.
- The scheme will address the competitive challenges facing emissions-intensive trade-exposed industries in Australia.
- The scheme will address the impact of emissions trading on strongly affected industries.
- Measures will be developed to assist households (particularly low-income households) to adjust to the impact of carbon prices and to assist them to reduce emissions.

Acting now will also reduce the costs of mitigation by facilitating a more gradual adjustment to a low-carbon economy. It will give individuals and firms the opportunity to plan their adjustment pathways and better manage changes in technology, equipment and skills requirements. Industrial plant and equipment are expensive and long-lasting. Action now helps to avoid locking in more emission intensive investments, thereby heading off higher future costs from premature retirement.

In contrast, a wait-and-see approach leaves the economy open to far more serious future adjustment costs. There is a real risk that delaying action will mean bigger changes will need to be made more rapidly in future. In addition, technological advancement accelerates over time, making emission reductions relatively easier and less costly when action and innovation commence sooner.

Moreover, delaying the introduction of a carbon price carries its own costs. The resulting policy uncertainty increases risks and costs of new energy and emissions-intensive investments such as electricity generation infrastructure.

Substantially reducing Australia's national emissions will involve the most significant structural reform of the economy since the 1980s. This reform process will not be easy and involves challenges. Meeting these challenges risks will require the Government to

implement responsible economic policies focused on reducing emissions at the lowest possible cost in the context of a complex and challenging macroeconomic environment.

The Australian economy is well placed to undertake the necessary structural reform. Successive waves of microeconomic reform have enhanced the flexibility of the Australian economy, allowing us to deal with shocks such as the Asian financial crisis and the world economic slowdown of the start of this century. The Government's economic reform agenda, including the reforms being pursued through the Council of Australian Governments agenda and the Henry Tax Review, will further enhance the transformation capacity of the economy.

Structural reform of the economy will be required, regardless of the particular policies that are used to reduce emissions. Choosing economically inefficient options will not remove the need for structural reform, but will increase the cost, raise the burden and reduce our capacity to assist industries and households through the transition.

For example, relying on regulation alone would require the Government to know exactly where emissions could best be reduced and to implement specific targeted restrictions in a broad range of areas. No government has sufficient information to implement this comprehensively across the economy. Businesses and households are much better placed to know where they can reduce emissions at low cost. The scheme provides the incentives for these reductions.

The Carbon Pollution Reduction Scheme will be the key mechanism for achieving substantial emissions mitigation in a responsible manner and at the lowest possible cost. The scheme represents a continuation of Australia's economic reform path, addressing economic and social issues by harnessing flexible market processes.

International dimension to domestic mitigation

There are important links between our Australia's domestic and international climate change strategies. Being part of the group of countries leading on climate change will increase our influence in international negotiations and help break the current negotiation deadlock in which key countries are waiting for others to act first.

Developing a flexible and workable emissions trading model also demonstrates to other countries that they too can take on emissions targets while minimising the economic costs of doing so.

In this context, it will be to Australia's advantage to ensure that reductions in carbon pollution are:

- credible and environmentally effective
- achieved at the least cost to the nation's economy over the long term
- done in the simplest possible way to ensure that the wider community understands and supports the response.

The Carbon Pollution Reduction Scheme will also allow Australia to respond flexibly to the outcomes of international negotiations. In particular, the scheme can incorporate changes in trajectories, where necessary through changes to the cap itself. Section 1.2 explains how a cap and trade system works.

Pillar 2: Adapting to unavoidable climate change

Even if global mitigation efforts are successful, the science tells us that there is already substantial change built into the global climate system to which we will need to adapt.[20] The impacts of these changes represent considerable risk to assets, investment, environments, communities and regional economies. The costs of inaction from damage or asset loss are highly likely to exceed the costs of adaptation.

The Government's adaptation response will be critical to ameliorating these climate change risks to Australia, and is based around three key areas of action:

- improving our knowledge about the impacts of climate change – it will be crucial to harness the full capacity of our research community to achieve the necessary scientific understanding of climate change impacts
- strengthening the ability of Australians to respond to the impact of climate change – the Government will need to support local governments, planners and architects to build adaptation responses into their ongoing operations
- assisting areas of national vulnerability to climate change impacts – many of our areas of greatest vulnerability will require additional support to build resilience to climate change, including our coastal zones, infrastructure, agricultural sector and world heritage areas such as the Great Barrier Reef.

Box 1.3
Enhancing climate change science

Improved climate change science provides the basis to understanding the likely magnitude, timing and nature of climate change. Australia has a small but world-class science capability and has contributed strongly to addressing key areas of global science uncertainty such as sea level rise and the role of the southern ocean in global climate regulation.

The science community has commenced development of a national climate change science framework, which will outline the science agenda that is important for Australia, including the research infrastructure and collaboration required. The framework is due for completion later in 2008.

Pillar 3: Helping to shape a global solution

The third pillar reflects the fact that Australia has the standing and capacity to positively shape the post-2012 outcome. A key Australian objective for the post-2012 outcome is for it to achieve mitigation actions by all major economies, noting that the nature of individual commitments would differ according to national circumstances. In seeking a more robust multilateral response, the critical objective for Australia is to broaden the number of countries willing to take commitments. While all countries should act to mitigate climate change, the top 15 emitters are responsible for nearly three-quarters of global greenhouse gas emissions (Table 1.2). The participation of these countries in a post-2012 outcome on mitigation is key.

Table 1.2 Share of global greenhouse gas emissions, 2000 to 2050

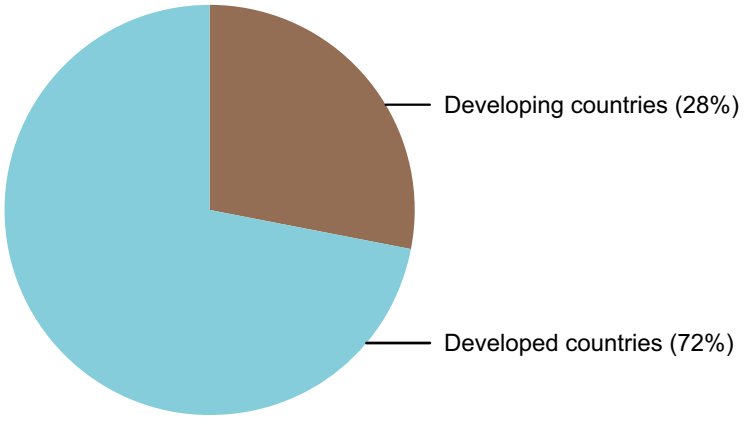
Country	Per cent of global emissions 2001	Per cent of global emissions in 2050
United States	21.6	9.7
EU25	15.2	5.5
China	14.8	31.1
Russia and CIS	9.3	5.6
India	5.2	11.5
Japan	4.3	1.1
Canada	2.3	1.1
Australia	1.5	0.9
Indonesia	1.4	2.1
South Africa	1.2	1.3
Rest of the world	23.3	30.0

Note: Excludes emissions from land-use change and forestry

Source: Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008

Developed countries should take the lead on reducing greenhouse gas emissions, as they have been primarily responsible for the increase in anthropogenic greenhouse gas concentrations in the atmosphere to date (see figure 1.5). It is therefore understood that developed countries must take the lead in reducing global emissions. Due to the current and expected future growth in emissions from developing countries, their relative contribution is expected to change.

Figure 1.5 Contributions to atmospheric concentrations of greenhouse gases 1850–2002



Notes: This figure shows the relative contribution of developed and developing countries to increases in concentrations from CO2 emissions from fossil fuels and cement manufacture over the period 1850-2002.

Source: Kevin Baumert, Timothy Herzog, Jonathan Pershing 2005, '*Navigating the numbers greenhouse gas data and international climate policy*', World Resources Institute, United States of America.

The Bali Road Map agreed at the 2007 Conference of Parties envisages that Australia and other advanced countries will adopt economy wide targets. Developing countries also need to take action to slow the growth of their emissions, at the same time as they continue their economic and social development. An effective post-2012 outcome needs to reflect actions by all key countries, in binding international commitments which are consistent with our global agreement to common but differentiated responsibilities and respective capabilities. The Government fully expects that the nature and scale of commitments will differ but all nations of the world need to play their part and make nationally-appropriate binding commitments to do this.

Being part of the group of countries leading will enhance our seat at the international table. However, it will also reduce the economic costs and enhance the opportunities associated with moving to a low carbon world. Earlier action allows a more gradual transition to a low carbon economy, allowing individuals and businesses to adjust and learn over time. This learning process will give us a competitive advantage compared with countries that persist with economic structures based on carbon prices that are not sustainable.

Developing a domestic emissions trading scheme would mean Australia is well placed to participate in, and influence, expanding carbon markets in Europe, North America and our region (Box 1.4), as well as the evolution of the Kyoto Protocol market arrangements.

Box 1.4
Developments in emissions trading in other countries

European Emissions Trading Scheme

Commenced in 2005. Caps CO_2 emissions from energy and industrial sectors. Includes 27 countries, including Norway, Iceland, Liechtenstein and Switzerland.

New Zealand Emissions Trading Scheme

Commenced in 2008. Initially covers forestry, expanding to full coverage of all sectors and gases by 2013.

Norway

In 2005 Norway introduced an emissions trading scheme covering CO_2 emissions from energy, oil, coke and industrial production. In October 2007, Norway, Iceland and Liechtenstein (countries in the European Economic Area) linked with the EU ETS.

Japan's Voluntary Emissions Trading Scheme

Voluntary scheme established in 2005 to trial emissions trading, initially between 31 businesses.

Box 1.4
Developments in emissions trading in other countries (continued)

Canada

Emissions trading scheme to be introduced in 2010, covering around half of Canada's emissions from electricity, oil, gas, iron, steel, cement, chemicals and fertiliser. All sectors would be required to reduce their emissions intensity from 2006 levels by 18 per cent by 2010, with two per cent continuous improvement every year after that.

Regional Greenhouse Gas Initiative (US)

Due to commence January 2009. Cooperative effort by nine Northeast and Mid-Atlantic states to constrain CO_2 emissions to current levels in 2009, and then reduce 10% by 2019. Initially covers emissions from power plants.

Western Climate Initiative (US)

Currently under development. Arizona, California, New Mexico, Oregon and Washington, Utah, Montana and the Canadian provinces of British Columbia and Manitoba have agreed to develop an initiative to reduce aggregate emissions to 15% below 2005 levels by 2020.

The Midwestern Greenhouse Gas Accord

The Accord was agreed in November 2007 although no specific targets or design elements have been released. Accord includes six US states and one Canadian province. Parties intend to have targets for reducing emissions from all six (Kyoto) gases in place by November 2008, and finalise the design of the scheme within one year.

California

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

Links with domestic policy

Australia's domestic action will affect our international credibility, and thus our ability to help shape a global solution. Agreement to a long-term goal is unlikely without developed countries providing reassurance that they will accept higher national goals than a global goal to allow developing countries to take on lower obligations than the global average. Our long-term national emissions reduction target (60 per cent on 2000 levels by 2050) places us in the vanguard of the global effort and the Carbon Pollution Reduction Scheme shows that we are serious about achieving it.

In the coming years, establishment of emissions trading systems will build momentum towards international market-based solutions. Cooperation on emissions trading among those developed countries with economy-wide targets is likely to evolve gradually. Few,

if any, developing countries are likely to adopt national emissions trading systems with caps within the next decade or so, but many will be willing to sell offsets. Australia is building the carbon accounting capacity, a prerequisite to participation in any form of emissions trading, of key developing countries including China.

For Australia, New Zealand and many developing countries, the agriculture and forestry sectors make significant contributions to emissions. The European Union and some developing countries are cautious about a comprehensive inclusion of these sectors because of a long standing view that the focus of mitigation effort should be on energy and industrial sectors. There is an important benefit in a comprehensive approach, including incentives for action on reforestation and avoiding deforestation in developing countries. Australia is using deforestation efforts through the International Forest Carbon Initiative to test possible future international approaches.

There is considerable international cooperation on clean energy technology and the Government, its key research institutions and business participate in all significant initiatives. Carbon capture and storage, solar and geothermal technologies have been identified as strategic priorities for Australia. With regard to adaptation responses, Australia will be able, and expected, to assist vulnerable countries in the region adapt to unavoidable climate change. Consequences across the region will vary, with some countries being particularly exposed in relation to climate risks, such as sea level rise, while others are potentially significantly impacted by climate change responses. Assisting the region in this way will help ameliorate potentially regional impacts and support sustainable development.

1.2 How a cap and trade scheme works

A 'cap and trade' emissions trading scheme is a way of limiting greenhouse gas emissions. Setting a limit means that the right to emit greenhouse gases becomes scarce—and scarcity entails a price. The Carbon Pollution Reduction Scheme will put a price on carbon in a systematic way throughout the economy.

The mechanics of a cap and trade Carbon Pollution Reduction Scheme are set out in Box 1.5 below.

Box 1.5
Mechanics of a cap and trade Carbon Pollution Reduction Scheme

Emitters of greenhouse gases need to acquire a 'permit' or 'emissions unit' for every tonne of greenhouse gas that they emit.

The quantity of emissions produced by firms will be monitored and audited.

At the end of each year, each liable firm would need to surrender an emissions unit for every tonne of emissions that they produced in that year.

The number of 'carbon pollution permits' issued by the Government in each year will be limited.

Firms compete to purchase the number of 'carbon pollution permits' that they require. Firms that value the permits most highly will be prepared to pay most for them, either at auction, or on a secondary trading market. For some firms, it will be cheaper to reduce emissions than to buy permits.

Certain categories of firms might receive some emissions permits for free, as a transitional assistance measure. These firms could use these permits or sell them.

A critical point is that the costs to the community arise not from the Carbon Pollution Reduction Scheme itself but from the prior commitment to reduce national emissions. Alternative approaches to reducing emissions will impose higher costs on the community because they would not make use of the incentives created by the market mechanism to draw out all low-cost opportunities to reduce emissions.

As well as driving actual emissions reductions, the introduction of a carbon price provides a financial incentive for investment in low-emissions technology research, development and commercialisation. Investment in technological solutions that reduce greenhouse gas emissions has the potential to deliver high financial returns to those sectors with a high marginal cost of abatement. These sectors have a strong incentive to reduce their carbon liability exposures.

A carbon cap should also lead to consumer behavioural changes that support a lower carbon economy. For example, higher electricity prices will provide an incentive for consumers to conserve energy in their homes.

The implications of the Carbon Pollution Reduction Scheme will be profound. Indeed, the capacity for the Carbon Pollution Reduction Scheme to change the economy over time puts it on par with other important economic reforms, such as reducing tariffs or deregulating the financial system. Placing a limit, and hence a price, on emissions has the potential to change the things we produce, the way we produce them, and the things we buy.

1.2.1 Essential elements of a cap and trade scheme

The first essential element of a cap and trade scheme is that aggregate emissions are capped at a level that is consistent with the environmental objective. Since there are several different types of greenhouse gases and many different sources of emissions across the Australian economy, the Government must first decide what types and sources of emissions are to be subject to the cap. This choice is referred to as the 'coverage' of the scheme, and is discussed in Chapter 2.

Once the scheme's coverage has been determined, the scheme cap needs to be set. The cap sets a limit on the aggregate emissions from all the covered types and sources of emissions. Individual caps are not set for individual sectors or entities. Caps can be set for single years or for a number of years. As discussed in Chapter 4, the Government proposes to set annual caps.

The level of the scheme cap determines the environmental contribution of the scheme: the lower the cap, the more abatement that must occur. The actual cap and the scope of coverage can be determined independently. However, broader coverage will reduce abatement costs and therefore allow for more ambitious emissions caps.

The number of tradable carbon pollution permits will be equal to the scheme cap – if the cap were to limit emissions to 100 million tonnes of carbon dioxide equivalent (CO_2-e) in a particular year, 100 million emissions permits would be issued for that year. As discussed in Chapter 3, the Government proposes that the scheme permits be known as 'carbon pollution permits'.

Entities responsible for emissions sources covered by the scheme will be obliged to surrender a permit for each tonne of CO_2-e that they have emitted during the compliance period.

A common misconception is that the Carbon Pollution Reduction Scheme will set limits on emissions for individual companies or facilities, and that companies will be able to sell permits if they emit less than their limit, or must buy permits if they emit more. This is not the case. The limit on emissions applies to all covered emissions sources—there is no limit on emissions from individual sector, firms or facilities. Companies are free to emit at whatever level they choose, as long as they surrender an eligible compliance permit for every tonne of those emissions at the end of the compliance period. Companies may or may not have received some compliance permits free of charge, but that does not change this basic compliance rule in any way.

Carbon pollution permits will be tradable and the price of permits determined by the market. The price will be positive (that is, greater than zero) if permits are scarce – that is, if intended emissions exceed the number of available permits. As discussed in

Chapter 4, the more efficient the carbon market, the more cost effectively abatement will be achieved.

The cap will achieve the desired environmental objectives only if it is enforced. This means that entities responsible for emissions covered by the scheme must monitor their emissions and report to the Government. Arrangements for the verification and assurance of emissions will also be required and a penalty needed for noncompliance. These arrangements are discussed in Chapter 5.

Carbon pollution permits can enter the market either by auction or by free allocation. As long as the cap remains unchanged, the way permits enter the market does not significantly affect the abatement outcome. Whether a company receives carbon pollution permits for free or purchases them in the market, it will face the same incentives. Companies are likely to be willing to pay for permits if their internal costs of abatement are higher than the price of permits and abate if the their internal costs of abatement are lower than the price of permits. Companies who own a permits, would be willing to sell them if the revenue received from selling permits exceeds the profits from using them. A company perspective is illustrated in Box 1.6.

Box 1.6
A company perspective

Different companies will have different abatement costs and opportunities. Under an emissions trading approach, the decision whether to emit or abate will differ from company to company. Consider an example where the market price for a carbon pollution permit is $20.

Company A can reduce its emissions for a cost of $15 per tonne of emissions. Its cost of abatement is lower than the market price for a permit. If the company had permits, it would sell them. If the company had no permits, it would be cheaper for the company to abate than to buy a permit so that it could emit.

Company B can reduce emissions for a cost of $40 per tonne of emissions. Its cost of abatement is higher than the market price for a permit. If the company had permits, it would use them and emit. If the company had none, it would buy them in the market so it could emit.

These market incentives work to move the permits to the highest value use and to encourage the cheapest abatement to occur first. The tradability of Australian permits ensures that the emissions cap is achieved at least cost (see Box 1.7).

The introduction of a carbon price will change the relative prices of goods and services, making emissions-intensive goods more expensive relative to those that are less emissions intensive (see Box 1.7).

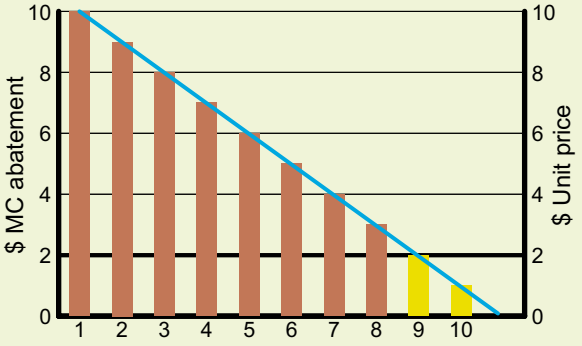
Box 1.7
Market efficiency

Consider a stylised example in which there are 10 entities, each emitting one tonne of emissions before the introduction of an emissions trading scheme. The different costs of abatement of these entities, from highest to lowest ($10 to $1), are illustrated below.

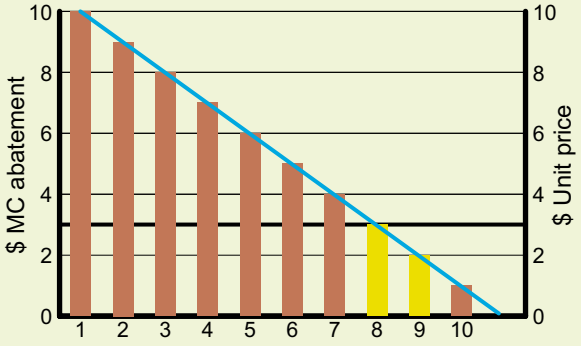
The Government implements an emissions trading scheme with a cap that limits emissions to eight units across the 10 entities. In this example, this means that eight entities will be able to purchase and surrender permits in order to emit and two entities will be required to abate.

In the chart, the brown bars represent the eight entities that will emit (and surrender permits) and the yellow bars represent the two entities that will abate. The objective of the emissions trading scheme is to ensure that the two entities with the lowest costs of abatement abate.

An efficient market



An inefficient market



In an efficient market, the entities that abate are those with the lowest costs of abatement. The eight entities with the higher abatement costs will purchase permits for surrender following emission; the two firms with lower abatement costs will abate.

In this situation, the unit price will be $2 (equal to the marginal firm's cost of abatement). Those firms with a cost of abatement that is less than or equal to the price are better off or unaffected, respectively, if they abate. Those entities with a cost of abatement higher than the price are better off paying for the unit so that they can emit. The direct cost of abatement in the economy is the sum of the two abating entities' costs; that is, $1 + $2 = $3.

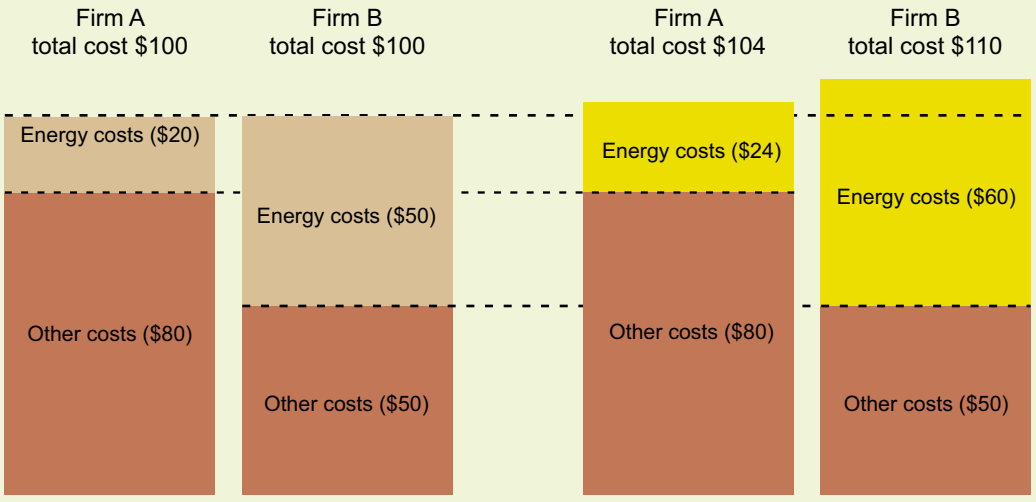
The market is said to be inefficient if any of the eight entities with higher cost of abatement are forced to abate rather than purchase and surrender permits. An inefficient market will mean that the over-all cost of the same level of abatement will be greater than where the market is efficient.

Box 1.8
An emissions trading scheme will change relative prices

The emissions trading scheme will increase the cost of activities that cause greenhouse gas emissions. Relative prices of goods and services across the economy will change with the introduction of a price for permits: emissions-intensive goods will become relatively more expensive. This provides the right incentives for consumers and businesses to adjust their behaviour, resulting in a reduction of emissions.

This example illustrates how the relative prices of goods will change with the introduction of an emissions trading scheme. In this example, an assumption is made that the emissions trading scheme increases energy costs, which are directly related to emissions. The two entities, particularly entity B, will have an incentive to find ways to produce their output with less energy and therefore less emissions as a result of their production. It is assumed that the additional cost of production associated with emissions is passed through to the consumers of their products. So, consumers will also have an incentive to change their consumption which will also leading to less emissions.

With no price on emissions **With a price on emissions**



1.2.2 Comparing an emissions trading scheme to other possible policy responses

Market-based approaches to reduce emissions allow abatement to be achieved at lower cost to the economy because abatement can occur where and when it is most cost effective.

An alternative market-based mechanism would be a carbon tax. While the incentives for firms to reduce their emissions would be similar under either mechanism, an emissions trading scheme has the advantage of delivering a defined environmental outcome and can be linked to other scheme's giving firms access to least cost abatement opportunities internationally. For these reasons, the Government believes that an emissions trading scheme is preferable to a carbon tax (see Box 1.9).

Box 1.9
Why not a tax?

Both an emissions trading scheme and a carbon tax are ways of putting a price on carbon. An emissions trading scheme restricts the quantity of emissions and allows the market to set the price of carbon pollution permits–the carbon price. A carbon tax increases the cost of emissions by a set amount and allows the market to determine how much abatement to undertake in response–that is, whether it is more cost effective to pay the carbon tax or to undertake abatement.

Where the Government has full information, a carbon tax and an emissions trading scheme can deliver similar economic and environmental outcomes. However, it is rare that the necessary information conditions can be met for a carbon tax and an emissions trading scheme to be equivalent policy instruments.

The key benefit of an emissions trading scheme over a tax is that it secures the environmental objective by controlling the quantity of emissions directly. Emissions trading may provide greater long-term policy credibility as the community can see the direct link between the policy instrument and the environmental objective.

Australia's international commitments are likely to continue to be defined as quantitative targets so this approach allows international obligations to be managed more effectively.

Emissions trading has emerged as the preferred approach in many other developed countries. In part, this is because domestic emissions trading schemes can easily be linked, giving firms the capacity to access least cost abatement opportunities internationally. As this occurs, carbon prices will equalise across countries, creating a global carbon price, without the need for centralised decision making. Carbon taxes could also be harmonised but this would involve multi-party agreement and would therefore be difficult to achieve in practice.

Emissions trading also allows for mechanisms to help entities manage the uncertainty around future carbon prices. For example, emissions trading allows for derivative financial products to be developed. It is difficult for a carbon tax approach to provide similar means to manage uncertainty around future carbon prices.

Governments can also achieve abatement by regulating or placing legal restrictions on the activities that cause greenhouse gas emissions. Such measures are often costly to administer and to comply with. Regulatory approaches are also likely to impose significant costs on business as they normally require affected parties to achieve specified outcomes irrespective of the individual costs. As a result, there is little incentive to innovate or to do more than is absolutely necessary for compliance.

The abatement outcome of a regulatory approach is likely to be different to that achieved by an emissions trading scheme. This is because, unlike regulatory approaches, an emissions trading scheme uses a market to determine where, and at what cost, emissions reductions occur. Consumers and businesses, who generally have better information than governments about their preferences and costs, can decide the best way to reduce emissions.

An emissions trading scheme will lead to different levels of abatement in different sectors according to the relative cost of abatement in those sectors and sensitivity of demand to prices. This is because:

- the marginal cost of abatement, the cost of reducing an additional unit of emissions, differs by business and by sector
- in response to a change in price, people adjust their demand to a different degree depending on the nature of the good or services. For some goods and services relatively small shifts in price will result in relatively large shifts in demand (this is referred to as elastic demand) but for other goods and services the same shift in price will result in little or no shift in demand (this is referred to as inelastic demand).

As such, the outcome from an emissions trading scheme will differ from that achieved by a regulatory approach.

1.3 Managing the adjustment to a carbon constrained economy

The increased cost of carbon will generally be expected to be passed on to consumers, and will particularly affect the price of carbon-intensive goods and services such as energy. Therefore, most of the economic impact will be felt in relative shifts across the economy – the price of emissions intensive products will increase relative to products that are not so emissions intensive.

Some sectors, especially those that are emissions-intensive, will be vulnerable and dislocation may be experienced in some regions. Other regions will be home to new industries and will benefit. So the introduction of the Carbon Pollution Reduction Scheme will create both winners and losers. It will involve significant economic and social adjustments.

The total cost to Australia will depend on how ambitious we are in bringing down our emissions, and how quickly we can do that.

While the overall cost of transition will depend mostly on how fast and how far we want to reduce national emissions, the overall cost can be partly reduced by effective policies. The impacts of the scheme on household budgets can be addressed through changes to the tax and welfare systems. Policies can also help to insulate the impact on some sectors, but that will mean that other sectors will have to bear more than their fair share of the national adjustment cost.

Overall economic risks can best be managed by setting a medium-term emissions trajectory that puts Australia on a low emissions path while allowing the economy to adjust at a pace that preserves our economic prosperity.

This green paper does not address the level of caps (the limit on emissions) that will apply under the Carbon Pollution Reduction Scheme. The Government will determine Australia's medium-term national emissions targets at the end of 2008, taking into account the work of the Garnaut Climate Change Review and modelling undertaken by the Treasury. More detail on this work is provided in Box 1.10. Final decisions on scheme caps will be made once this work has been published and there has been sufficient opportunity for public scrutiny.

Box 1.10
Garnaut Climate Change Review and Treasury Modelling

Garnaut Climate Change Review

The Garnaut Climate Change Review was asked to report on a number of matters including:

- the role that Australia can play in the development and implementation of effective international policies on climate change
- medium- to long-term policy options for Australia (and to make recommendations for those)
- the time path for the implementation of medium- to long-term policy options, which, taking the costs and benefits of domestic and international policies on climate change into account, will produce the best possible outcomes for Australia.

The Final Report will be delivered to the Australian governments by 30 September 2008. More information, including the full terms of reference, can be found at:
http://www.garnautreview.org.au/domino/Web_Notes/Garnaut/garnautweb.nsf

Treasury modelling process

Treasury is undertaking a comprehensive economic modelling exercise of the macroeconomic, sectoral and distributional impacts of greenhouse gas emissions reduction targets and trajectories on the Australian economy.

The Treasury modelling exercise will be an input into the Government's decision on medium-term emissions reduction targets.

The results of the modelling will span a wide range of economic variables, including:

- macroeconomic impacts, including GDP, prices and terms of trade
- sectoral impacts by state and industry
- carbon prices over time and reductions in global and national greenhouse gas emissions
- distributional impacts on different types of households.

A wide range of stakeholders have been consulted in the ongoing development of the modelling assumptions, and there will be an opportunity for public scrutiny of the modelling before final decisions are made on emissions trajectories.

The Treasury modelling also underpins the Garnaut Climate Change Review's analysis of the costs of reducing emissions (that is the costs of mitigation). This will complement the review's analysis of the economic costs of climate change impacts.

1.4 Complementary Measures

The Government has inherited a collection of policy measures and programs which evolved over the past 11 years. When viewed as a whole, it becomes apparent that those measures could have been more coherent, consistent and effective if they had been developed within a clear policy framework.

The ratification of the Kyoto Protocol and, more importantly, the commitment to implementing an emissions trading scheme have fundamentally shifted the policy environment. These twin policy commitments shape Australia's policy framework and allow for development of a coherent and targeted set of policy measures to be developed. Such measures were not previously available.

The introduction of the Carbon Pollution Reduction Scheme is an opportunity to assess whether other policy measures are needed. While the scheme will provide a mechanism for achieving low cost national abatement, additional mitigation measures will still be required to assist with the transition to a low-carbon economy. Mitigation measures that work alongside the Carbon Pollution Reduction Scheme to help reduce Australia's emissions are often referred to as 'complementary measures'.

Complementary measures should target a market failure that is not adequately addressed by the scheme, or that impinges on its effectiveness in driving emissions reductions. In some circumstances complementary measures may be transitional because although they may be necessary to address a specific failure in the short- to medium-terms they are not expected to be helpful in the longer term.

Complementary measures can achieve additional mitigation in uncovered sectors, and have the potential, if carefully targeted, to reduce the cost of emissions reductions more broadly.

To provide a comprehensive mitigation response, key complementary measures that are likely to be consistent with achieving abatement at the lowest possible cost are those that:

- drive mitigation in sectors not covered by the scheme
- support and drive research, development and demonstration of new technologies where the investors are unable to capture the full benefits of their investment
- address other market failures, such as non-price barriers
- inform and educate.

In developing these policies it will be necessary to consider any potential negative implications they may have for the ongoing operation of the Carbon Pollution Reduction Scheme; for example, by reducing efficiencies, dampening price signals or distorting market responses.

The Government has already initiated a process to assess climate change policies to determine whether they are consistent with the emerging policy framework that includes an emissions trading scheme.

The Strategic Review of Australian Government Climate Change Programs ('the Wilkins Review') will assess whether existing programs and election commitments are complementary to the emissions trading scheme, identify gaps where new policy might assist and recommend the phasing-out of inefficient programs and rationalisation of duplicative and overlapping programs. It is due to report to the Government by 31 July 2008.

The states and territories have also agreed, through COAG, to review their existing policies and programs, assessing the 'complementarity' of their measures using a set of principles agreed through the COAG Working Group on Climate Change and Water.

The Garnaut Climate Change Review will be another source of advice to the Government on complementary measures.

1.5 The objective of the scheme

There are many choices involved in the design of an emissions trading scheme. In making these choices, the Government is guided by the objective of the scheme.

The objective of the Carbon Pollution Reduction Scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms.

The need to reduce emissions is clear. Failure to reduce global greenhouse gas emissions will lead to very large costs being imposed on the economy and society. That said, all policies designed to avoid the costs of climate change will themselves involve costs. The first part of the objective recognises that it is desirable for emissions reduction targets to be achieved in the most cost-effective way. Because of its broad coverage and use of decentralised incentives, an emissions trading scheme is likely to reduce costs compared with other mechanisms reducing emissions.

The second part of the objective recognises that, acting alone, Australia cannot solve the climate change problem. Like other nations, Australia must rely on international cooperation to achieve the necessary reductions in global greenhouse gas emissions. Therefore, it is vital that Australia's mitigation efforts, including the Carbon Pollution Reduction Scheme, are designed to support an effective global response.

A well-designed and successfully implemented Carbon Pollution Reduction Scheme can contribute to shaping an effective global response by:

- helping Australia meet its international climate change obligations, including its national target under the Kyoto Protocol
- demonstrating to other countries that emissions reduction targets can be achieved cost effectively though an emissions trading scheme with broad coverage
- supporting Australia's international negotiating position
- helping to support the development of international emissions trading.

1.1 Preferred position

The objective of the Carbon Pollution Reduction Scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms.

1.6 Assessment criteria

While the Carbon Pollution Reduction Scheme will be designed to meet the overall objective, each design element of the scheme involves a choice between multiple design options. The Government considers that a consistent set of criteria should be used to assess different options to ensure that the scheme's design achieves the overall objective.

In reaching preferred positions and dispositions for scheme design the Government has used the following assessment criteria:

- Environmental integrity: design options should achieve the desired environmental outcomes. Impacts on environmental outcomes can be direct, for example when a cap on emissions is set, or indirect, for example when a design option has an affect on the credibility of the scheme or the development of an effective global emissions constraint.
- Economic efficiency: the new emissions trading market should achieve its environmental goals as efficiently as possible. That is, permits should go to the highest value use, and the lowest cost abatement should be undertaken. Further, the operation of the scheme should not impose an excessive compliance burden, and should be simple and predictable to facilitate informed and efficient investment decisions.
- Minimisation of implementation risk: a complex scheme design poses greater risks to the smooth and timely commencement and ongoing implementation of the scheme. Some design parameters and services may help to ensure that the transition to the scheme is manageable.
- Policy flexibility: flexibility in the design of aspects of the scheme is desirable to allow the scheme to respond to changing circumstances and for the inherent uncertainties associated with climate change to be dealt with appropriately.
- Promotion of international objectives: design options should support Australia's international negotiating objectives and be consistent with international obligations, including trade and climate change treaties. The scheme's design should be compatible with relevant internationally accepted standards and practices.
- Implications for the competitiveness of traded and non-traded industries: The introduction of a carbon price ahead of a global carbon constraint has the potential to affect the international competitiveness of traded industries in Australia. In developing measures to address such impacts, and in the design of the scheme more generally, it is important to consider the effects of different options on the competitiveness of all Australian industries. This will ensure the most efficient allocation of resources and the maximisation of the productive potential of the economy.
- Accountability and transparency: decision makers are required to justify their decisions and are subject to public scrutiny. The scheme's operational rules and parameters should be made simple and transparent.
- Fairness: distributional impacts should be taken into account in the overall package of scheme design and associated assistance measures.

These criteria have been used to assess options and to arrive at the preferred positions outlined in the green paper. Some criteria are more relevant to particular design issues than others. Furthermore, some design decisions may require a trade-off between two or more of these criteria.

1.2 Preferred position

Design options are to be assessed against the following assessment criteria:

- environmental integrity
- economic efficiency
- minimisation of implementation risk
- policy flexibility
- promotion of international objectives
- implications for the competitiveness of traded and non-traded industries
- accountability and transparency
- fairness.

1.7 Summary of the green paper

This green paper canvasses design options for the Carbon Pollution Reduction Scheme and presents the Australian Government's dispositions and preferred positions. Stakeholders are encouraged to consider the options carefully and provide feedback to inform the Government's final decisions on the design of the scheme.

Chapter 2 assesses sectoral coverage options and the potential scope for domestic offsets, and outlines options for choosing the 'point of obligation' (which defines 'liable entities').

Chapter 3 outlines factors involved in the functioning of the carbon market, and includes a discussion of the features of an efficient market. The chapter assesses options for the nature of permits and market dynamics, including provisions for banking and borrowing, and whether a 'make-good' provision should be included.

Chapter 4 assesses design options for the setting of emissions targets and caps for the scheme. This chapter does not discuss the level of scheme caps.

Chapter 5 discusses reporting and compliance issues. This includes consideration of options for emissions monitoring, reporting and assurance; emissions estimation methodologies; audit requirements; the surrender process; and compliance.

Chapter 6 discusses the potential to link the Australian Carbon Pollution Reduction Scheme with international markets. The chapter assesses which international units would be accepted for compliance in the scheme, and options for the transfer of abatement outside of Australia.

Chapter 7 discusses the distribution of permits and considers the framework for the auction of permits under the scheme.

Chapter 8 discusses measures to help households adjust to the introduction of the scheme.

Chapter 9 considers the different options for providing assistance to those industries that are strongly affected by the introduction of the Carbon Pollution Reduction Scheme

Chapter 10 considers the different options for providing assistance to emissions-intensive trade-exposed industries.

Chapter 11 discusses preferred positions for the taxation treatment of Australian permits and outlines the framework relevant to the financial accounting treatment for permits

Chapter 12 summarises the role and scope for measures to complement the scheme, the transition of existing schemes, and the way in which early action will be treated in the scheme.

Chapter 13 discusses governance and scheme implementation, including the roles and responsibilities of the scheme regulator and other bodies with responsibility under the legislation, and the nature of reviews.

1.8 Next steps: engagement in the process and final decisions

The Australian Government is committed to a comprehensive consultation process in designing the Carbon Pollution Reduction Scheme. This green paper is intended to inform stakeholders of the different design options being considered by the Government and provide an indication of the Government's preferred position.

In preparing this green paper, the Government has consulted widely. It has engaged with state and territory governments through the COAG process. Extensive discussions have also been held with industry and non-government organisations, through formal consultative roundtables, and in smaller meetings.

Final policy decisions will not be made until the Government has fully considered stakeholders' feedback on the design options outlined in this green paper. The final design will also take into account the work of the Garnaut Climate Change Review, the economic modelling being undertaken by the Treasury, and the previous work of the TGET and NETT.

The Government intends to release a white paper and an exposure draft of the Bill which is to establish the Carbon Pollution Reduction Scheme in December 2008. Stakeholders will also have an opportunity to provide feedback on that draft. Also by the end of 2008, in the context of the white paper, the Government will give a firm indication of the planned medium-term trajectory for the scheme.

The Government intends to introduce the Bill into parliament in March 2009, aiming to achieve passage of the Bill by mid-2009. During 2009, consultation on the emissions trading regulations will be undertaken.

The Act is expected to come into force in the third quarter of 2009. At that time, the scheme regulator will be established.

The Government intends that the Carbon Pollution Reduction Scheme will commence in 2010.

1.9 Making a submission

Stakeholders are encouraged to engage fully in the consultation process and consider carefully the options canvassed in this report. The Government invites interested parties to register their interest and make a written submission.

Stakeholders may comment on any matter they consider relevant to the design of the Carbon Pollution Reduction Scheme. In particular, they may wish to comment on the design options canvassed in this report, with a focus on the Government's preferred positions.

Submissions made to previous processes of the TGET, NETT and the Garnaut Climate Change Review will be taken into account. However, stakeholders can re-submit part or all of the submissions made to those bodies if they so wish. Box 1.11 provides guidance on making a submission.

Each submission, unless it is made in confidence, will be published on the Department of Climate Change's website, at which time it will become a publicly available document. This will occur soon after the submission is received, unless it is accompanied by a request to delay release for a short period. Submissions will remain on the department's website indefinitely. Copyright resides with the author(s), not with the Government.

Submissions are due on or by 10 September 2008.

Submissions can be forwarded to:

Postal: Carbon Pollution Reduction Scheme Green Paper Submission
Department of Climate Change
GPO Box 854
Canberra ACT 2601
Australia

Email: emissionstrading@climatechange.gov.au

A cover sheet for submissions is available at www.climatechange.gov.au or can be requested from the Department of Climate Change on 1800 057 590.

Important: Please indicate clearly if you want your submission to be treated as confidential or anonymous.

Confidentiality statement

All submissions will be treated as public documents, unless the author of the submission clearly indicates the contrary by marking all or part of the submission as 'confidential'. Public submissions may be published in full on the website, including any personal information of authors and/or other third parties contained in the submission. If your submission contains the personal information of any third party individuals, please indicate on the cover of your submission if they have not consented to the publication of their information. A request made under the *Freedom of Information Act 1982* for access to a submission marked confidential will be determined in accordance with that Act.

Box 1.11
Guidance on making a submission

There is no set structure for submissions. They may range from a short letter outlining your views on a particular topic to a much more substantial document covering many issues. Where relevant, you should provide evidence, such as data and documentation, to support your views.

Submissions can be made in electronic, audio or printed format; however, electronic format is preferred because it makes publication on the website easier. The electronic version should be a text document (.txt, .rtf), a Microsoft Word document (.doc) or similar text format, rather than Adobe Portable Document File (.pdf) format, in order to make the document accessible for people using assistive technology, such as screen readers.

Under certain circumstances, the Government can accept material in confidence, including commercially sensitive material. You should contact the Department of Climate Change before submitting such material to discuss its nature. The material should then be provided under separate cover and clearly marked 'IN CONFIDENCE'.

All tracked changes, editing marks, hidden text and internal links should be removed from submissions before sending them to the department. Large logos and decorative graphics should also be removed to keep files as small as possible.

Each submission should be accompanied by the submission cover sheet, in which you can provide personal and organisational details not for publication. For submissions received from individuals, all personal details other than name and state or territory of residence (for example, home address and home phone number) will be removed from the text of the submission before it is made publicly available. This is to ensure compliance with privacy laws.

Endnotes

1 Carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulphur hexafluoride (SF6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

2 Garnaut Climate Change Review: http://www.garnautreview.org.au

3 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on emissions trading*, Commonwealth of Australia, 2007.

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5 Intergovernmental Panel on Climate Change Fourth Assessment Report, *Working Group I – The physical science basis*, 2007.

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14 K Chen and J McAneney, *High-resolution estimates of Australia's coastal population with validations of global population, shoreline and elevation datasets*, Geophys. Res. Lett., 33, L16601, 2006.

15 Australian Bureau of Agricultural and Resource Economics.

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17 Australian Bureau of Statistics.

18 Australian Bureau of Energy and Resource Economics, Energy in Australia 2008.

19 CSIRO and Bureau of Meteorology, *Climate Change in Australia*, 2007.

20 Intergovernmental Panel on Climate Change Fourth Assessment Report, *Working Group I – The physical science basis*, 2007.

2. Coverage

This chapter considers design issues relating to scheme coverage: which greenhouse gases, emissions sources and sinks should be included in the scheme, when should they be included, and which entities should be responsible for holding pollution permits for them. The chapter also considers the scope for offsets from emissions sources that are not included in the scheme.

The Government has announced that the scheme should have maximal practical coverage of greenhouse gas emissions and sectors. Maximal scheme coverage is a key element in minimising the overall cost to the Australian economy of achieving emissions reductions. It will increase opportunities for low-cost emissions reductions and ensure that the cost of achieving these reductions is shared equitably across the economy. Broad coverage will also ensure that competing firms and sectors operate within equivalent market rules.

The Government's preferred positions on coverage would mean that the scheme includes around 75 per cent of Australia's emissions and applies obligations to around 1000 entities. There are around 7.6 million registered businesses in Australia: the great majority would not have scheme obligations. Final decisions on coverage will be made with other decisions on scheme design at the end of 2008.

For sectors that are not covered by the scheme, alternative abatement measures should be considered, particularly if the sector is likely to remain outside the scheme for some time.[1] The purpose of such measures would be to ensure that all sectors make a contribution towards the costs of achieving Australia's national emissions reductions objectives and have incentives to undertake abatement. Alternative mitigation measures could include mandatory adoption of emissions standards, certain low-emissions technologies or management practices. Offsets are another mechanism that could provide incentives for firms in uncovered sectors to undertake additional abatement. By their very nature, however, offsets assist other sectors to meet their emissions obligations, rather than providing a means by which a sector contributes to national emissions reductions.

Previous work on emissions trading in Australia has supported broad coverage. Box 2.1 describes the different approaches to coverage that have been recommended in Australia and adopted in other emissions trading schemes.

Scheme coverage decisions reflect the range of other mitigation measures that jurisdictions have in place. For example, the European Union scheme does not include transport, but Europe has imposed very high fuel excise taxes and stringent vehicle fuel and emissions standards to reduce transport emissions.[2]

Box 2.1
Extent of coverage in other schemes and Australian proposals

Broad coverage is consistent with the work by the Task Group on Emissions Trading (TGET)[3], the National Emissions Trading Taskforce (NETT)[4] and the Garnaut Climate Change Review.[5]

TGET argued for maximum practical coverage of all sources and sinks, and of all greenhouse gases. It considered that it would be practical to include between 70 per cent and 75 per cent of Australia's emissions in the scheme initially through coverage of energy, industrial process and fugitive emissions. TGET suggested that remaining emissions sources, including those from land use, be included once measurement uncertainties and compliance cost issues were resolved.[6]

NETT recommended immediate inclusion of stationary energy, transport, industrial process and fugitive emissions, and consideration of coverage of fugitive emissions from open-cut coal mines and waste. It recommended that land use emissions not be included because of compliance costs and emission estimation issues.[7]

The Garnaut Climate Change Review's *Draft Report – July 2008* argues that an efficient scheme would cover as many emitting sectors as possible within practical limits imposed by factors such as measurability and transaction costs.[8] The Report considers that the scheme should include all greenhouse gases listed under the Kyoto Protocol from energy, transport, industrial processes and fugitive emissions from fuel production; that forestry and waste should be included as soon as practical; and that inclusion of agriculture should be subject to progress on emissions estimation.

The European Union Emissions Trading Scheme includes only stationary energy and industrial processes, resulting in coverage of approximately 40 per cent of total emissions.[9]

It is proposed that the New Zealand Emissions Trading Scheme will have very broad coverage, with sectors to be phased into the scheme over a number of years—forestry in 2008, stationary energy and industrial processes in 2010, liquid fossil fuels in 2011, and agriculture and waste in 2013.[10]

Neither the New Zealand scheme nor the EU scheme includes domestic offsets. New Zealand does not include domestic offsets in its scheme, because it intends it to have comprehensive coverage.[11] The EU scheme does not allow domestic offsets for reasons of administrative simplicity and because the EU intends to address emissions from uncovered sectors through alternative mitigation measures.[12]

This chapter is structured as follows:

- Section 2.1 discusses the international accounting framework under the Kyoto Protocol
- Section 2.2 discusses coverage of greenhouse gases
- Section 2.3 sets out the approach to coverage
- Section 2.4 provides a sector-by-sector analysis
- Section 2.5 provides a fuel-by-fuel analysis
- Section 2.6 discusses emissions from land use, and includes discussion of current international accounting for land-based emissions as well as the scheme's accounting framework
- Section 2.7 discusses coverage of agricultural emission
- Section 2.8 sets out the approach to coverage of forestry
- Section 2.7 discusses offsets.

2.1 International accounting framework

The international accounting framework under the Kyoto Protocol specifies which emissions sources and sinks count towards Australia's Kyoto target and provides guidance on approaches to, and methodologies for, calculating national emissions inventories (Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol)).

This guidance is important because greenhouse gases come from varied and, in some cases, diffuse sources and can be difficult to measure directly. While Australia calculates many of its emissions using highly accurate site-specific methodologies, it estimates others using internationally agreed default methodologies that rely on proxies of direct emissions, such as fuel quantities or fertiliser consumption. These are designed to ensure that emissions estimates are accurate, on average, over large sample sizes.

Parties to the Kyoto Protocol account for six greenhouse gases (Annex A of the Kyoto Protocol):

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- sulphur hexafluoride (SF_6)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs).[13]

The protocol recognises that the 'strength' of the greenhouse effect—or 'global warming potential'—of each gas is different (see Table 2.1). The most common greenhouse gas is carbon dioxide and by convention other greenhouse gases are converted to a carbon dioxide equivalent (CO_2-e), taking into account their internationally agreed global warming potentials.[14]

Table 2.1 Kyoto Protocol gases—global warming potential

Kyoto gases	Global warming potentials
Carbon dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous oxide (N_2O)	310
Sulphur hexafluoride (SF_6)	23,900
Hydrofluorocarbons (HFCs)	140–11,700
Perfluorocarbons (PFCs)	6,500–9,200

Source: Intergovernmental Panel on Climate Change Second Assessment Report: The Science of Climate Change

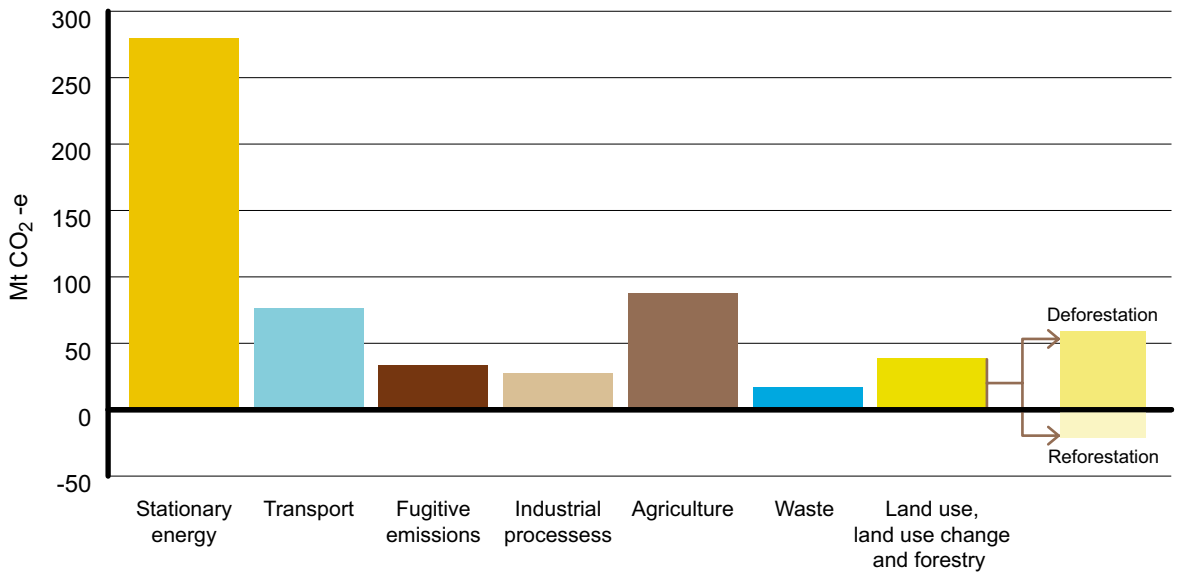
The international accounting rules have defined seven sectors for reporting human-induced greenhouse gas emissions:

- *Stationary energy*: primarily carbon dioxide emissions from fuel combustion for electricity generation, and energy production in the petroleum refining, manufacturing, construction and commercial industries and for domestic heating

- *Transport*: primarily carbon dioxide emissions from the direct combustion of fuels for road and rail transport, domestic aviation and shipping
- *Fugitive emissions*: methane, carbon dioxide and nitrous oxide emitted during the production, processing, transport, storage and distribution of coal, oil and gas
- *Industrial processes*: emissions from chemical reactions associated with manufacturing processes, mineral processing, and chemicals and metal production
- *Agriculture*: primarily methane and nitrous oxide from livestock and cropping
- *Waste*: primarily methane; includes emissions from solid waste sent to landfill and from the treatment of domestic, commercial and industrial wastewater
- *Land use, land-use change and forestry*: in this sector, only emissions from land-use change activities—reforestation and deforestation—are counted towards Australia's Kyoto target:
  - Reforestation: conversion of land used for other purposes to forested land
  - Deforestation: conversion of forested land to alternative land uses.

In 2006, Australia's net greenhouse gas emissions using the Kyoto accounting provisions were 576.0 million tonnes of CO_2-equivalent (Mt CO_2-e). The energy sector was the largest source of greenhouse gas emissions, contributing 69.6% (400.9Mt CO_2-e) of emissions (Figure 2.1). This proportion is less than in many countries, due to the relatively large contribution from the agriculture (15.6%) and land use, land-use change and forestry sectors (6.9%) to Australia's inventory. The industrial processes (4.9%) and waste (2.9%) sectors are relatively minor sources.[15]

Figure 2.1 Australia's national emissions profile in 2006



Source: National Greenhouse Gas Inventory 2006, Department of Climate Change

2.2 Coverage of greenhouse gases

Human-induced climate change is driven by a range of greenhouse gases, of which carbon dioxide is the most significant. Different greenhouse gases are produced by different emissions sources and activities.

Emissions of all six Kyoto Protocol gases are counted towards Australia's international commitments.

In designing a domestic carbon pollution reduction scheme, one option would be to include only the most common greenhouse gases or those that can be most easily estimated on commencement, with the remaining greenhouse gases included over time. For example, the EU scheme began by covering only carbon dioxide.[16] This option would not necessarily simplify the scheme and could complicate emissions reporting, given that entities already calculate and report, or are preparing to calculate and report, all greenhouse gases from their facilities under the National Greenhouse and Energy Reporting System (NGERS). This option would also limit scheme coverage and create discrepancies between the scheme's emissions reporting and the reporting in Australia's national emissions inventory.

An alternative option would be for the scheme, from commencement, to cover all the greenhouse gases included in the Kyoto Protocol. As this approach is consistent with current reporting obligations, it would not add to implementation risks or to compliance costs. This option would ensure that the incentives created by the scheme align with the desired environmental goal as defined under the international climate change framework.

2.1 Preferred position

All greenhouse gases included under the Kyoto Protocol—carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons—would be covered from scheme commencement.

2.3 Approach to coverage

The Government would prefer that the scheme have maximal coverage, but recognises that there are practical constraints on achieving this objective. These constraints are:

- compliance costs—compliance costs will be reduced if scheme obligations apply to a relatively small number of large emitters
- capacity to estimate emissions in an unbiased manner—the scheme will only have environmental integrity if emissions are estimated using unbiased, internationally recognised methodologies.

The use of unbiased estimation methodologies will ensure that price signals are applied to different sectors in a consistent way. Nevertheless, while precise entity-level estimates are not a practical requirement for coverage, scheme efficiency will increase if more

precise measurement methodologies are applied. The accuracy of emissions estimates will also have consequences for the equity of the scheme. If emissions estimates for some entities are consistently above their actual emissions, those entities will be at a disadvantage compared to entities with higher actual emissions.

Scheme coverage will produce powerful incentives to improve estimation methodologies. Chapter 5 outlines a staged approach to improving measurement precision over time. This would also ensure that the market is given sufficient notice of any changes that could otherwise cause price shocks.

2.3.1 Points of obligation

The logical starting point for imposing scheme obligations is the point at which emissions are physically produced. Imposing scheme obligations directly on emitters ('direct obligation') creates the clearest possible incentives for emitters to undertake abatement action.

However, in sectors with many small emitters, a direct approach to coverage would impose excessive compliance costs. As there are fixed, per-entity costs of scheme participation, such as the costs associated with establishing emissions estimation systems, annual reporting and managing permits, the costs of scheme participation will be proportionally higher for smaller entities. Moreover, as numbers of participants increase, it becomes not only costly but impractical to expect individual emitters to meet scheme obligations. For example, in the transport sector there are many millions of cars, which are sources of emissions.

Adopting an emissions threshold to ensure that the scheme includes only large entities could introduce competitive distortions between entities above and below the relevant threshold, because scheme obligations would not apply to entities below the threshold.

To achieve comprehensive coverage of all emissions in sectors with large numbers of small emitters, scheme obligations could be applied at another point along the supply chain ('indirect obligation'). For example, obligations for emissions from fuel consumption could be placed upstream on fuel suppliers, using proxies of direct, end-use emissions. Downstream emitters would face price effects on the fuels and other inputs they consume as the upstream carbon costs are passed down the fuel networks. This would provide incentives to reduce emissions by using fuels and other emissions-intensive goods more efficiently.

Scheme obligations could also be applied downstream from the source of emissions. For example, obligations for agriculture emissions could be placed on food processors such as abattoirs, dairies and mills, using proxies of direct, on-farm emissions. To ensure that farm businesses have incentives to reduce their emissions, those proxies would need to vary to reflect differences in the emissions intensity of production, including those resulting from management practices. Carbon costs would be passed downstream to consumers, which would result in consumption of relatively fewer emissions-intensive foods and fibres.

Indirect points of obligation will not be available for all emissions activities, leaving direct obligation as the only coverage option for some emissions sources, which may not always be cost-effective. The optimal approach to defining the point of obligation for each sector will depend on the composition of the industry.

2.3.2 Thresholds

Emissions thresholds should be set at a level that balances compliance costs against scheme coverage; that is, thresholds need to be high enough to exclude emitters that it would not be cost-effective to include, but low enough to capture most of the emissions from any given source.

TGET[17] and NETT[18] both proposed for direct emitters a threshold of around 25,000 tonnes of carbon dioxide equivalent a year (25 kt CO_2-e/year). The facility emissions threshold for reporting requirements under the *National Greenhouse and Energy Reporting Act 2007* is also set at 25 kt CO_2-e/year. This threshold was selected because most stationary energy emissions, fugitive emissions and industrial processes emissions are emitted by entities whose emissions exceed that amount.

While other thresholds are also possible, the scheme's emissions threshold should be consistent with the reporting threshold under NGERS; that is, scheme obligations would apply in relation to facilities with gross, direct emissions of 25 kt CO_2-e/year or more (as defined by the NGERS legislation). Liable entities would not have to surrender permits for their direct emissions, for example from combustion of transport fuels, which may be overed at a different point in the supply chain.

The emissions threshold would not apply to entities with scheme obligations for indirect emissions, although it will be important to ensure that entities with indirect scheme obligations are large enough to participate cost-effectively in the scheme.

Particular threshold issues relevant to different sectors are considered as part of the sector-by-sector analysis (Section 2.4).

2.2 Preferred position

In general, the emissions threshold for direct obligations under the scheme would apply to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more. Different thresholds may be required for the waste sector and synthetic greenhouse gases.

2.4 Sector analysis

2.4.1 Stationary energy

Stationary energy contributes around 50 per cent of Australia's emissions and is the fastest growing source of emissions.[19] Most emissions from this source are from the electricity generation sector, which consists of around 100 large facilities. The remaining emissions are from direct combustion of fuels by large and small emitters in the petroleum refining, manufacturing and construction industries, with small contributions from home heating, on-site diesel generation, and on-farm machinery.[20]

Site-specific emissions estimation methodologies are used to estimate emissions from most large emitters. [21]

Because stationary energy contributes such a large and growing proportion of emissions to Australia's total emissions, coverage of this sector is critical to meeting Australia's climate change commitments. Around 90 per cent of emissions from this source can be covered by applying direct scheme obligations to around 100 power generation facilities and to between 200 and 300 large manufacturing facilities whose emissions exceed 25 kt CO_2-e/year.

The remaining 10 per cent of stationary energy emissions could be covered by lowering the emissions threshold. Depending on the threshold chosen, this could result in coverage of small entities, whose participation in the scheme would not be cost-effective.

An alternative option would be to impose scheme obligations for the remaining stationary energy emissions on upstream suppliers of coal, natural gas and liquid fuels to households. This approach would involve few additional compliance costs, given that these upstream suppliers are also likely to have scheme obligations for their direct emissions (see Section 2.5).

2.3 Preferred position

Stationary energy emissions would be covered from scheme commencement by applying scheme obligations both to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more and to suppliers of fuel to small energy users.

2.4.2 Transport

Transport emissions account for around 14 per cent of Australia's emissions. Road transport contributes almost 90 per cent of transport emissions, with the remainder coming from rail, and domestic aviation and shipping. [22]

Australia has millions of motorists and a significant number of freight companies, making it impractical to apply scheme obligations directly. Restricting direct coverage to large emitters, such as freight companies whose emissions exceed 25 kt CO_2-e/year, would result in coverage of only 30–40 per cent of transport emissions and would lead to significantly different impacts on closely competing freight companies on either side of the emissions threshold.

To achieve comprehensive and cost-effective coverage of transport emissions, scheme obligations could be applied to around 200 upstream fuel suppliers. Emissions from fuel combustion can be easily and accurately estimated using internationally approved methodologies, because emissions from fuel combustion are highly predictable. There would therefore be little loss of scheme efficiency as a result of imposing scheme obligations indirectly. Section 2.5.1 considers precise points of obligation for liquid fuels.

It may also be possible to allow large emitters to directly manage their emissions, while fuel suppliers retain responsibility for emissions from small emitters. However, the Government understands that establishing the necessary administrative systems to accurately calculate and exclude ('net out') fuel supplied to large users may not be feasible, at least in the short term. This suggests that, if transport emissions were covered, fuel suppliers would need to be responsible initially for emissions from both larger and smaller domestic users. Nevertheless, netting out is necessary from scheme commencement for exported fuels and certain other fuels, including:

- fuels that are not combusted but are sequestered in products (for example, plastics)
- fuels used for international shipping and aviation, including domestic sections of international voyages (these are dealt with under separate international negotiations)[23]
- fuels supplied to visiting defence forces under status of forces agreements and to consular vehicles on official business.

The Government would therefore work with the fuel supply industry to assess options for large emitters to directly manage their emissions combustion following the first year of scheme operation. Netting out arrangements are discussed in more detail in Section 2.5.7.

The inclusion of transport emissions in the scheme would imply that consumers would see the carbon price signalled through changes in fuel costs. Such changes would be minor compared to petrol price rises over recent years as a result of increasing global oil prices. For example, the increase in petrol prices from 90 cents/litre in 2003 to current prices at around $1.70/litre is roughly equivalent to a carbon price of $320, which is well in excess of the expected carbon price under the scheme.

Changes in fuel prices will create incentives to changes patterns of fuel use and, over time, will influence the decisions that consumers make about the vehicles they purchase as well as where to live and work, as discussed further in Box 2.2. However, given recent significant increases in global energy prices and the current cost of living pressures facing households, the Government recognises that households already face strong incentives to reduce their fuel use.

The Government proposes to cut fuel taxes for the first three years of the Carbon Pollution Reduction Scheme on a cent for cent basis to offset the price impact on fuel. This will allow motorists five years to plan for potentially higher fuel prices. Over this period many people will have the opportunity to make decisions – for example, over the purchase of a new car – informed by the longer term implications of the Carbon Pollution Reduction Scheme, with consequential impacts on their future demand for fuel.

As the carbon price changes over the first three years of the Carbon Pollution Reduction Scheme, the Government will periodically assess the adequacy of this adjustment mechanism and adjust fuel taxes accordingly.

After three years, the adjustment mechanism will be subject to review.

The Government will also extend this measure to cover on-road business users. This will flow through so that the effective burden will remain equal to the road user charge, which is currently 19.6 cents per litre.

To ensure that rural and regional areas are not disadvantaged, the Government will rebate the effect of the emissions units on businesses in the agricultural and fishing industries for three years. This is necessary as the excise system effectively does not apply to this sector.

For heavy vehicle road users, fuel taxes will be cut on a cent-for-cent basis to offset the initial price impact on fuel associated with the impact of the Carbon Pollution Reduction Scheme. The Government will review this measure after one year.

Box 2.2
Merits of including transport in the scheme

One argument made against including transport emissions in the scheme is that the resultant increase in fuel prices may result in only limited abatement of transport emissions in the short term, because many motorists have few immediate options for reducing their fuel consumption.

There are, however, a number of strong arguments for including transport emissions in the scheme.

First, studies have shown that, while fuel users might not be particularly responsive to prices in the short term, they are more responsive in the longer term. It takes time for people to adjust. Significant and sustained price changes will influence people's decisions about which cars to buy and where to live and work. For example, fuel consumption in the United States fell in 2007 in response to increasing global fuel prices. This was the first such decline in 30 years.

The Bureau of Infrastructure, Transport and Regional Economics has estimated that, in the short term, car fuel use in Australia declines by about 1.5 per cent in response to a 10 per cent increase in the petrol price, but that this rises to 4 per cent when longer-term responses are taken into account.[24]

Australia, in contrast to European countries, has not had a period of elevated fuel prices for longer than seven years (in the late 1970s and early 1980s). It is possible that the long-run responsiveness to radically higher fuel prices could even be greater, given threshold effects on consumer choices and technological development. International studies have suggested that, at higher fuel prices, consumption declines by up to 7 per cent for every ten per cent increase in fuel prices, once demand and supply side (technology) changes are taken into account.[25]

Box 2.2
Merits of including transport in the scheme (continued)

Long-term reductions are the result of changes to vehicle size, vehicle fuel efficiency, vehicle fuel type, technology, mode of transport (for example, road, rail or cycling), and residential location.

- In 2003, 30 per cent of Australian purchasers of passenger motor vehicles bought large vehicles; in 2007, 18 per cent. Consumers are also choosing more fuel-efficient vehicles within each size category. This reduced new vehicle fuel use from 9.7 l/100 km in 2003 to 9.0 l/100 km in 2007.
- Diesel vehicles, the most fuel-efficient conventional liquid fuel vehicles, increased their share of new vehicle sales from 5 per cent in 2005 to 9 per cent in 2007.
- Hybrid vehicles accounted for 0.2 per cent of sales in 2005; but 0.6 per cent in 2007.
- Use of urban public transport in recent years has also grown significantly above the trend of the past 30 years.

Second, excluding transport emissions from the scheme is likely to increase the carbon prices applying to other sources of emissions, such as electricity. This would place a large burden on other sectors of the economy, and that burden would flow through to households–that is, even though petrol prices might not increase, households would face higher costs than otherwise. While the Government will initially mitigate the increase in the fuel price as a result of the scheme through a reduction in excise taxation, including the transport sector in the scheme will ensure it contributes to the abatement task over the longer term, avoiding the need to impose larger burdens on other sectors.

Finally, the overall impact of the scheme, including its effects on low-income households, will depend on the whole package, including direct assistance measures for households.

2.4 Preferred position

Transport emissions would be covered from scheme commencement, with scheme obligations applied to upstream fuel suppliers.

The Government would work with the fuel supply industry to develop administrative arrangements to enable fuel that is exported, used for international transport, sequestered in plastics, and supplied to visiting defence forces and consular vehicles to be excluded from obligations under the scheme.

2.4.3 Fugitive emissions

Fugitive emissions account for around six per cent of Australia's emissions.[26] Fugitive emissions are released in the course of oil and gas extraction and processing; through leaks from gas pipelines; and as waste methane from black coal mining. Most fugitive emissions occur from facilities that emit more than 25 kt CO_2-e/year (around 100 coal mines and fewer than 50 gas producers and distributors).

There are both national default emission factors and site-specific emissions estimation methodologies for fugitive emissions from oil and gas production.

State governments currently require underground coal mines to monitor methane emissions using site-specific methods of emissions estimation for the purposes of occupational health and safety regulations, and many voluntarily report this data in annual reports and to the Australian Government, contributing to the compilation of Australia's National Greenhouse Accounts.

Fugitive emissions from open-cut coal mines are currently estimated using internationally approved default factors for the purposes of Australia's National Greenhouse Accounts.[27] However, default factors provide less accurate estimates of emissions than site-specific methodologies, as emissions are highly variable and dependent on site-specific conditions. The coal industry has indicated that the practical difficulties of estimating site-specific emissions from open-cut mines can be resolved. The open-cut coal mining industry, in cooperation with the Government, is currently developing more accurate emissions estimation methodologies.

Fugitive emissions from oil and gas, including from pipelines, and from underground coal mines could be covered from scheme commencement by applying scheme obligations directly to entities, including pipeline operators, whose emissions exceed 25 kt CO_2-e/year. This approach would result in a small number of small emitters remaining outside the scheme, which could introduce distortions between covered facilities and facilities below the threshold. Those distortions, if they occur, are likely to affect relatively few facilities.

Fugitive emissions from open-cut coal mines could be covered in the same way, using the existing internationally agreed default factors until more accurate estimation methodologies are available. The use of default factors could disadvantage entities whose emissions are below the default average and would provide little incentive for entities to undertake abatement action, given that such abatement might not be reflected in their emissions estimates and hence their scheme obligations.

An alternative approach would be to make coverage of emissions from open-cut coal mines conditional on developing more accurate estimation methodologies, which could delay coverage of those emissions. This approach could create perverse incentives to delay development of more accurate emissions estimation capabilities as a means of deferring scheme obligations. It could also introduce competitive distortions between underground coal mines, which could be included from scheme commencement, and open-cut coal mines. The Government's preferred option is, therefore, to include all fugitive emissions (including those from open-cut coal mines) from scheme

commencement, recognising that the industry is making significant efforts to develop more accurate emissions estimation methodologies.

Further analysis and consultation with industry and with state and territory governments would be required to identify an appropriate treatment of decommissioned mine sites with fugitive emissions.

2.5 Preferred position

Fugitive emissions would be covered from scheme commencement by applying scheme obligations to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.

2.4.4 Industrial processes

Industrial process emissions account for around five per cent of Australia's emissions. These emissions are from chemical reactions (other than fuel combustion) and include synthetic greenhouse gases—hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).[28] Emissions from synthetic greenhouse gases are dealt with separately below.

There are internationally approved, site-specific methodologies for estimating most of these emissions.

The largest individual sources of industrial process emissions are iron and steel making, cement and lime making and aluminium smelting. Facilities that emit more than 25 kt CO_2-e/year account for the great majority of industrial process emissions (other than synthetic greenhouse gases).

2.6 Preferred position

Emissions from industrial processes would be covered from scheme commencement by applying scheme obligations to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more.

Synthetic greenhouse gases

Synthetic greenhouse gas emissions account for around one per cent of Australia's emissions (or around one-fifth of industrial process emissions). These emissions are from the use of commercial and household equipment such as refrigeration, air-conditioning and high-voltage electrical equipment.[29]

Synthetic greenhouse gases were largely introduced as replacements for some ozone-depleting substances. They include three of the six Kyoto Protocol gases: HFCs, PFCs and SF_6. While these gases do not present a direct risk to the ozone layer, they have high global warming potentials and contribute significantly to the enhanced greenhouse effect if emitted.

Approximately 600 entities import synthetic greenhouse gases either as bulk gas supplies or within equipment. Most importers (other than importers of SF_6) are required

to report imports to the Government under the *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*. Many of these entities import small amounts of synthetic greenhouse gases within refrigeration and air-conditioning equipment. A small number of entities also re-export synthetic greenhouse gases, either as bulk gases or within equipment, with emissions occurring after export.

The fire protection, refrigeration and air-conditioning industries currently recover some waste synthetic greenhouse gases from old equipment, which is then destroyed, reducing emissions.

Given that synthetic gases are emitted by a very large number of household and small business users of air-conditioning and refrigeration equipment, it would not be practical or effective to cover these emissions directly, even applying a low emissions threshold.

To achieve comprehensive coverage of emissions in these circumstances, an alternative option would be to apply scheme obligations upstream, on importers of synthetic gases. Australia does not manufacture synthetic greenhouse gases, but any future domestic manufacture would also need to be covered by the scheme.

A threshold could be applied to exclude entities that import only small quantities of gases, as it would not be cost-effective to include them in the scheme. An emissions threshold of 5ktCO_2-e/year would achieve coverage of 98 per cent of emissions and involve 80 large importers of bulk gases and gases within equipment. Higher thresholds would also be possible, and risks of introducing competitive distortions between importers above and below the threshold need to be considered.

If this approach were adopted, arrangements would be required to net out gases that are destroyed or re-exported. An alternative to netting out gases that are destroyed would be to allow destruction facilities to generate permits.

While covering synthetic gases may be practical, it has the potential to introduce competitive distortions between firms that import synthetic greenhouse gases and those that import hydrochlorofluorocarbons (HCFCs), which are controlled under the Montreal Protocol. Further analysis and consultation with industry would be required to identify options for addressing this.

An alternative approach to coverage of synthetic gases within the scheme would be to mandate reductions in the use of particular synthetic gases over a defined timeframe. Such approaches are likely to be less cost-effective than including synthetic greenhouse gases within the scheme. A regulatory approach is also likely to result in abatement outcomes different from those that would be achieved under the scheme.

2.7 Preferred position

Synthetic greenhouse gas emissions would be covered from scheme commencement by applying scheme obligations to bulk importers of synthetic greenhouse gases, large importers of equipment containing synthetic greenhouse gases, and domestic synthetic greenhouse gas manufacturers (of which there are currently none), with a threshold to be determined.

2.4.5 Waste

The waste sector accounts for just over three per cent of Australia's emissions. More than 85 per cent of waste sector emissions are from solid waste to landfill, with the remainder from wastewater (13 per cent) and solvent and clinical waste incineration (less than one per cent). The sector is not restricted to dedicated waste facilities. Wastewater from some manufacturing processes is treated on-site at the manufacturing plant. Methane capture is common in the waste industry. An estimated 26 per cent of methane emissions from landfill sites is either flared or used to generate renewable electricity.[30]

There are around 450 active solid-waste handling sites in Australia and well over 300 wastewater sites. However, most waste volume is managed by larger sites. In the case of landfill, fewer than 100 sites (around 20 per cent) account for more than 80 per cent of waste volume. Similarly, around 80 per cent of wastewater sites are small facilities, servicing rural and regional communities.[31]

Landfill facilities generate emissions for decades—typically around 20 years from the time that waste is deposited—continuing long after facilities are closed. Facilities nearing the end of their operating life have limited scope to recover emissions costs, as gate fees can be increased only while the facility is accepting waste. Closed facilities have no scope to directly recover costs. The precise number of closed sites is not known. However, the recent trend towards consolidation suggests that there are likely to be a large number (possibly thousands) of small closed sites scattered around Australia.

The lag between waste disposal and methane generation poses a difficult problem for scheme design. It creates competitiveness issues among operators, with significant implications if this results in abandoned landfill sites.

Obtaining an accurate estimate of the entire emissions profile of a landfill site is complex. Direct sampling techniques are available, but because emissions are dispersed over a wide area—and are highly variable across the surface of a site—they provide an incomplete picture. Indirect estimation methodologies, using proxies such as the volume of waste deposited, have therefore been proposed for NGERS.

The Government understands that there is a good prospect that credible, cost-effective direct measurement techniques are available in the short term. This is assisted by a rising interest in landfill measurement technology worldwide, driven by increased government regulation of greenhouse gas emissions and by a growing commercial interest in landfill gas capture for energy generation.

The Government recognises that decisions would need to be made about the appropriate emissions threshold for scheme obligations and the treatment of legacy emissions and closed sites.

Preliminary estimates indicate that a threshold of 25 kt CO_2-e/year would result in fewer than 100 participating landfill facilities in 2010 and account for around 80 per cent of landfill volume.[32]

There is some concern that a 25 kt CO_2-e/year threshold might result in the displacement of waste from covered to uncovered waste facilities. A lower threshold—for example, 10 kt CO_2-e/year—may prevent this, but it would also substantially increase the

number of participating waste sector facilities. It should also be noted that local planning regulations may mitigate some of these concerns.

Another option to prevent waste displacement would be to lower the threshold only for landfill sites within urban centres and surrounding areas. Analysis suggests that it may be cost effective to transport waste up to 82 kilometres from the original site at a carbon price of $20 per tonne of CO_2-e.[33]

The Garnaut Climate Change Review suggests that waste emissions should remain outside the scheme until the accuracy of emissions estimation improves. However, coverage would be possible using indirect estimation methodologies. Moreover, making coverage contingent on improving emissions estimation could create perverse incentive to delay progress on this in order to defer coverage. By contrast, inclusion in the scheme would create incentives for the waste sector to improve the accuracy of emissions estimation and is likely to reduce the costs of direct sampling techniques. As this occurs, the efficiency and equity of the scheme will improve.

The alternative to coverage would be a regulatory approach, to ensure that the waste sector plays its part in climate change mitigation. Waste facilities are already highly regulated, so operators are familiar with the concept of licensing and with the need to adhere to strict regulatory requirements. Regulatory options could include mandating methane capture at appropriate sites or mandating specific site engineering techniques; for example, requiring all new landfill sites to be capped and designed to maximise the potential for methane capture. Most states and territories already regulate methane emissions to some degree.

On the other hand, inclusion of waste emissions in the scheme would provide strong economic incentives for abatement, including reductions beyond regulatory requirements.

2.8 Preferred position

Emissions from the waste sector would be covered from scheme commencement, with the precise scope of coverage, thresholds and other detailed design issues to be determined.

2.4.6 Carbon capture and storage

Carbon capture and storage (CCS) is a developing technology to capture, transport and store emissions from gas production, electricity generation and other emissions-intensive industrial processes, such as ammonia production and cement manufacture. These emissions would be transported by pipeline or other methods and stored underground; for example, in existing geological structures that have an impermeable seal. CCS facilities can be operated by the owner of the manufacturing plant or power station (the 'originating entity'); alternatively, the facilities can be owned by a third party offering CCS services. Another alternative is for the carbon capture facility to be operated by the originating entity and the storage component to be operated by a third party offering CCS services.

There are two potential approaches to coverage of CCS:

- CCS operators could earn permits for sequestered carbon, which they could then sell or surrender to cover any emissions.
- Emissions that are captured and stored could result in a reduction in the number of permits that the originating entity would be required to surrender.

Under the first option, the operator of the CCS facility would receive permits for sequestered carbon and would be required to surrender permits for any emissions from the facility. To avoid double-counting of emissions—once as a reduction in the emissions of the originating entity and once by the CCS operator—the originating entity would need to report the carbon sent to the CCS facility as part of its gross emissions. The originating entity would also need to hold permits for its gross emissions rather than its net emissions.

Under the second option, the emissions that are captured and stored could result in a reduction in the number of permits that liable entities would be required to surrender. The CCS activity would be treated as a reduction in gross emissions—the emissions stored underground would be netted out from the liable entity's gross emissions. The operator of the CCS facility would be responsible for emissions from its facility.

The first option would require the originating entity to report gross emissions that would be considerably higher than their actual emissions, creating a potential risk to its reputation and corporate image, as well as financial risks associated with the additional scheme obligations. This option would also involve greater administrative costs, as the regulator would have to issue permits. For these reasons, the Government's preferred position is for carbon transferred to CCS facilities to be netted out of the originating entity's gross emissions, and for scheme obligations for fugitive emissions—from transporting the carbon and from the CCS facility—to be imposed on the operator of the CCS facility (subject to any alternative liability arrangements arising from enabling legal frameworks for CCS).

2.9 Preferred position

Carbon that is transferred to carbon capture and storage (CCS) facilities would be netted out of the originating entity's gross emissions. Scheme obligations for fugitive emissions—from transport of the carbon and from the CCS facility—would be imposed on the operator of the CCS facility.

2.5 Fuel analysis

Comprehensive scheme coverage of emissions from stationary energy and transport can be achieved by applying scheme obligations both on large direct emitters and on upstream fuel suppliers. The following analysis considers the precise points of obligation in the supply chains for each of the different fuel types.

2.5.1 Liquid and gaseous fuels

Liquid fuels include conventional products such as petroleum and diesel as well as alternative fuels such as liquefied petroleum gas (LPG), liquefied natural gas (LNG), compressed natural gas (CNG), new synthetic fuels known as 'anything-to-liquids' (including gas-to-liquid, biomass-to-liquid and coal-to-liquid fuels) and biofuels. The transport sector is the largest user of liquid fuels, although the manufacturing and energy industries use some liquid fuels.

The structures of the various fuel networks differ in complexity as they have different types of suppliers and other market intermediaries, ranges of products and types of users.

2.5.2 Petroleum products

Petroleum products are primarily used in the transport sector but are also used in the stationary energy and industrial process sectors (for example, petrochemical processes in which fuels are not combusted but are sequestered in products). There are a number of different groups of petroleum products, and each has its own separate supply network. The petroleum product groups are:

- standard petroleum fuel products—motor gasoline (petrol), aviation gasoline, aviation turbine fuel, kerosene, heating oil, automotive diesel oil and fuel oil
- three groups of non-standard petroleum products
  - residual fuel oil, naphtha, bitumen, petroleum coke, BTX (benzene, toluene and xylene) and other aromatics
  - lubricants, waxes, industrial spirit and white spirit
  - recycled products; that is, products used after recovery or recycling from primary uses (the most important is recovered waste lubricating oil)
- biofuels (bioethanol or ethanol and biodiesel)—produced from renewable feedstocks and used in internal combustion engines either in pure form or, more often, as an additive to petroleum-based fuel.

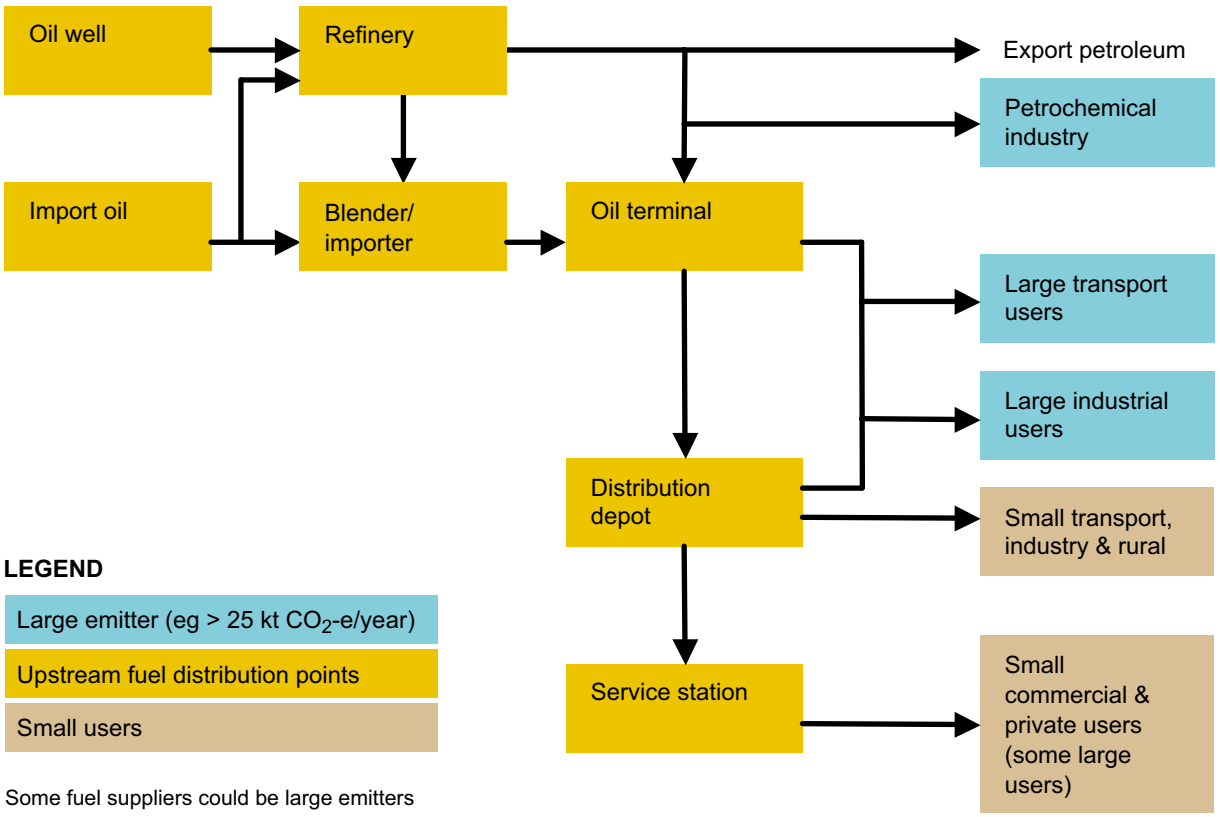
For standard petroleum fuels, the supply network consists of:

- seven oil refineries (operated by four major companies)
- importers and fuel blenders (around 10 companies)
- about 60 petroleum terminals (operated by the four major oil companies, plus five other operators)

- hundreds of distribution depots (with around 130 distributors)
- thousands of service stations
- millions of users (ranging from large transport fleets to individually owned motor vehicles, as well as large non-transport users).

Figure 2.2 shows the distribution network for standard petroleum products. Most non-standard products are imported or produced at petroleum refineries, and distributed directly to users or through the standard product supply network. Once blended with petrol, biofuels are distributed with standard products.

Figure 2.2 Petroleum supply network



There are many fuel suppliers at various supply points in the network—refineries, importers, blenders, distributors and service stations—each offering options for positioning indirect obligations, but each has its own measurement, cost and practical difficulties. There are around 20 major fuel suppliers—four major refiners or importers, five smaller independent operators, and around 10 fuel blenders. There are a further 130 or so smaller suppliers—biofuel producers, fuel suppliers in remote areas, mining companies that import directly, fuel distributors, independent operators and 'joint user hydrant installations' that supply fuel at airports.

Possible points of obligation for emissions from petroleum fuels are:

- all producers and importers of liquid fuel
- all liquid fuel suppliers covered by the fuel excise and customs duty systems (either all suppliers or only those above a specified threshold)
- major liquid fuel suppliers only.

The first option would involve a reasonable number of liable entities—around 20 major fuel suppliers and possibly another 130 or so minor producers and importers—and it would cover all petroleum fuel emissions. However, because there could be many intermediaries between the fuel suppliers and the final end users, the specific use of the fuel might not be able to be determined and accurate emissions estimates might therefore not be possible (as emissions vary depending on the final use).

The second option would also provide comprehensive coverage but would be likely to involve more liable entities than the first option because it would include distributors and blenders. The distinct advantage of this option, however, is the existence of the fuel excise and equivalent customs duty arrangements which provide robust and well-tested administrative systems to ensure that excise or customs duty is paid, that it is paid by the right entities, that it is paid once, and that the correct tax is paid. These arrangements offer a unique mechanism for tracking petroleum fuel quantities and their suppliers, which could be used as a platform to determine emissions obligations under the scheme. It could also provide a mechanism for netting out exports and international fuel users (as the tax system distinguishes between domestic and international use). Some minor volumes of fuel subject to customs duty, for example fuel contained in imported vehicles, may need to be excluded.

The third option would restrict the number of liable entities to around 20 major suppliers. However, it would not provide comprehensive coverage of petroleum fuel emissions. It could also have different impacts on liable entities and non-liable entities.

2.10 Preferred position

Scheme obligations for emissions from fuel combustion would be applied to all fuel excise and customs duty remitters for all liquid fuels currently subject to fuel excise and excise-equivalent customs duty, with thresholds to exclude smaller customs duty remitters to be determined.

New synthetic liquid fuels

Synthetic liquid fuels are new fuels emerging in Australia. Until the development of significant Australian markets for synthetic liquid fuels, it is not possible to identify the specific options for fuel supplier obligation.

However, when fully developed, the distribution networks are likely to allow scheme obligations to be applied to upstream fuel suppliers. This approach would involve few additional compliance costs, as most suppliers are also likely to be manufacturers and would therefore have scheme obligations for their direct industrial process emissions.

Synthetic liquid fuels are covered by the fuel excise and customs duty systems. This would allow scheme obligations to be applied to excise and customs remitters, as proposed for other liquid fuels.

2.11 Preferred position

Scheme obligations for emissions from synthetic liquid fuels would be applied to fuel excise and customs duty remitters.

Liquefied petroleum gas

Liquefied petroleum gas (LPG)—liquefied propane and butane—is used in both the stationary energy (mostly propane) and transport sectors (a mix of gases supplying around 6 per cent of Australia's transport fuel requirements[34]).

If LPG emissions were not covered from scheme commencement, there is a risk that fuel use would shift towards fuels that remain outside the scheme.

Emissions from combustion of LPG could be covered by placing scheme obligations at the highest point in the supply chain—on LPG producers and importers. This approach would achieve complete coverage of LPG supply and would involve only 10 or so large emitters. As most of these entities are likely to have scheme obligations for their direct emissions, this option would involve few additional compliance costs. However, this approach would not enable large users of LPG to directly manage their own LPG emissions in the future, as producers and exporters are too far upstream to allow LPG that is supplied to large end users to be separately identified and excluded ('netted out').

Another option would be to place scheme obligations on distributors and marketers, as well as producers and importers (approximately 20 entities). As these entities supply to end users, this may allow fuel supplied to large users to be separately identified and netted out in future, while allowing comprehensive coverage of LPG emissions. Further analysis and consultation with industry would be required on future netting out arrangements.

2.12 Preferred position

Scheme obligations for emissions from liquefied petroleum gas would be applied to producers, marketers, distributors and importers of liquefied petroleum gas supplied to energy users.

2.5.3 Liquefied natural gas and compressed natural gas

Liquefied natural gas (LNG) produced in Australia is mostly exported, with little current domestic consumption. LNG can be used directly for transport but is generally re-gasified and distributed as pipeline natural gas.

Compressed natural gas (CNG) is produced from natural gas supplies. Unlike LPG and LNG, most CNG is produced in major cities from natural gas networks, rather than at the gas processing plants.

While emissions from these sources are relatively minor, scheme coverage is important to prevent shifts in fuel use towards fuels that are not included in the scheme.

Emissions in Australia from combustion of LNG could be covered by applying scheme obligations upstream on producers. The limited maturity of the domestic supply network would make it difficult to apply obligations further down the supply chain. Facilities that produce LNG would be likely to have direct emissions exceeding 25 kt CO_2-e/year, so this approach would result in few additional compliance costs.

Where LNG is re-gasified and distributed via natural gas pipelines, scheme obligations could be applied to the relevant liable entities for natural gas (see Section 2.5.4).

Scheme obligations for emissions from combustion of CNG could be applied to entities that compress natural gas, and use or on-sell this as CNG. When CNG is used in vehicles, it produces fewer emissions than when natural gas is used in industrial, commercial applications or by households. Where practical, the emissions from CNG used in vehicles should be separately estimated (using different default factors) from natural gas used for other purposes.

2.13 Preferred position

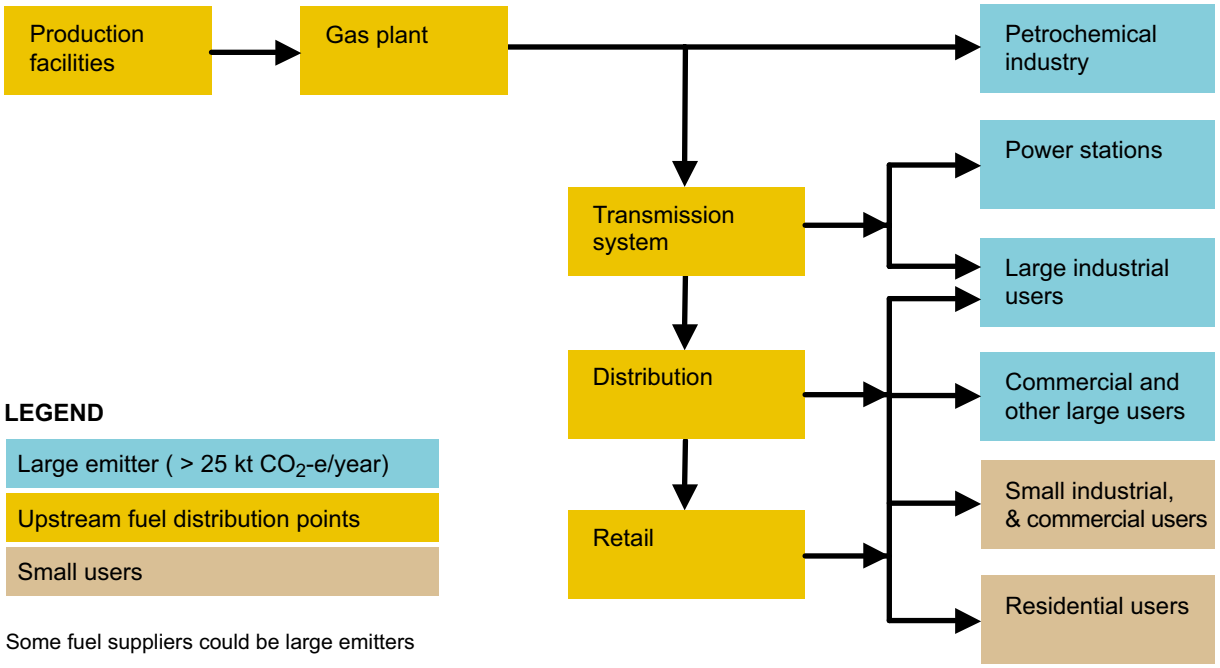
Scheme obligations for emissions from domestic combustion of liquefied natural gas and compressed natural gas would be applied to producers of those fuels.

2.5.4 Natural gas

Natural gas has a range of industrial, commercial and domestic applications, including in electricity generation and as an input for manufacturing. Small users account for almost 40 per cent of the emissions from combustion of natural gas.

The natural gas supply network is significantly different from the liquid fuels supply network. Transmission and distribution through pipelines with defined metering points facilitates the accurate tracking of the gas along the supply chain through to both large and small end users. The gas supply network is illustrated in Figure 2.3.

Figure 2.3 Gas supply network



The options for coverage of emissions from natural gas are:

- indirect obligations on gas producers
- indirect obligations on gas retailers
- a combination of direct and indirect obligations on gas producers and retailers and large direct users.

The first option would be to apply scheme obligations only on upstream gas producers. Gas production is at the top or the start of the gas supply chain, so applying scheme obligations at that point would achieve comprehensive coverage of gas emissions by covering around 25 gas producers. This option would not allow large emitters to directly manage their own emissions, as gas producers do not have sufficient information about downstream end use (gas retailers are the intermediaries between the gas producers and many consumers).

Alternatively, scheme obligations could be applied to gas retailers. However, this would not achieve comprehensive coverage, because some users deal directly with gas producers. As gas is sometimes transferred between retailers, there is also the risk of double-counting of emissions under this option.

A third option would be a mixed system of indirect and direct obligations. Under this option, scheme obligations would apply to entities whose gas emissions exceed 25 kt CO_2-e/year and coverage of gas emissions from small users would be achieved by applying obligations to gas retailers and, if necessary, gas producers that supply to domestic energy users. As retailers measure (meter) gas supplied to consumers, they would be able to net out supplies to large users. To ensure comprehensive emissions coverage, scheme obligations could be applied to gas producers for gas supplied directly to end users whose gas emissions were below 25 kt CO_2-e/year (rather than gas retailers).

To avoid double-counting of emissions, gas retailers and producers would require administrative arrangements to net out gas sold to other retailers and producers and to large emitters. Netting out arrangements can be complex and would involve administrative costs; for example, retailers would need to know whether customers will directly manage their scheme obligations.

The Government's preferred position is the third option, which achieves comprehensive coverage of natural gas emissions while allowing large emitters to directly manage their scheme obligations. Further analysis and consultation with industry on the netting out arrangements would be required.

2.14 Preferred position

Scheme obligations for emissions from natural gas combustion would be applied to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more, and to natural gas retailers and gas producers for emissions from gas supplied to small emitters.

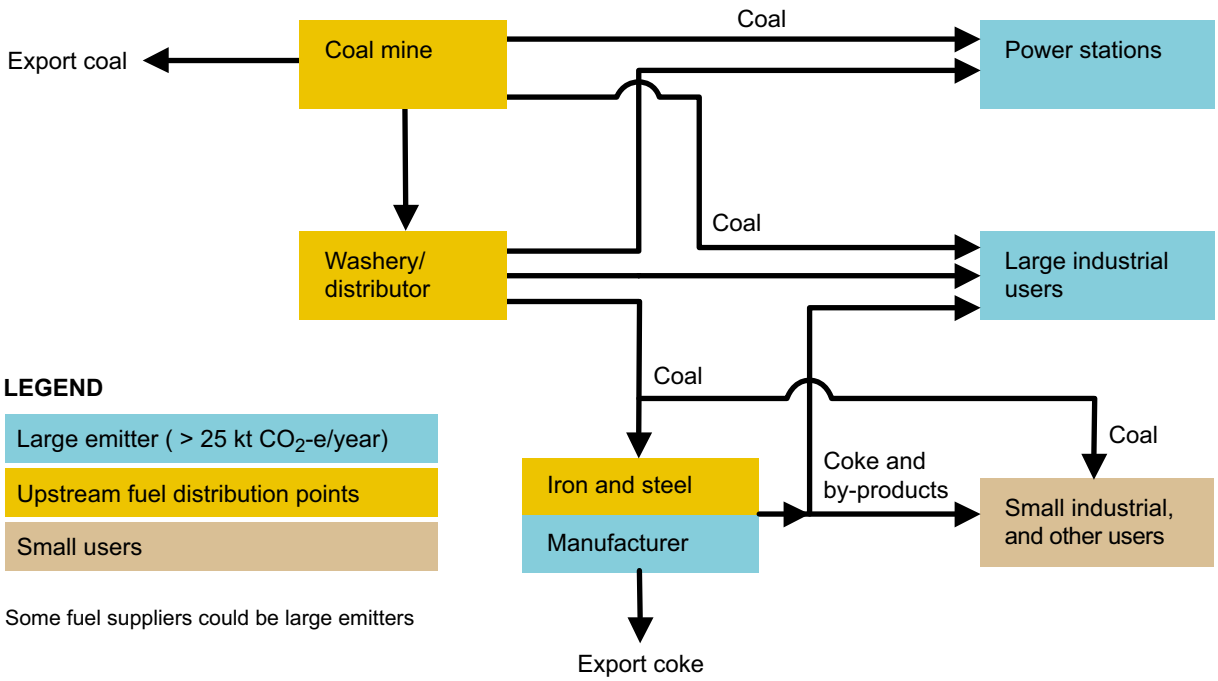
2.5.5 Coal

Australia uses black and brown coal. Large facilities, such as power stations and large manufacturing facilities use the most coal. Small amounts of coal are used in small boilers, in small commercial settings (brown coal briquettes) and in household barbecues (coal-based char).

Black coal

The supply networks for black coal are complex, with more than 100 coal mines, many washeries and other distributors, and three coke plants. Facilities with emissions exceeding the 25 kt CO_2-e/year threshold account for almost 100 per cent of emissions from coal combustion. Figure 2.4 illustrates the coal supply network.

Figure 2.4 Black coal supply network



The options for coverage of emissions from black coal are:

- to impose the obligation on mines, washeries and other distributors
- to have a combination of direct and indirect obligations.

The first option would be comprehensive and would include around 200 coal mines, washeries and distributors. This approach to coverage would be practical and cost effective, but would preclude large coal users from directly managing their scheme obligations.

The alternative option is to apply scheme obligations to large direct emitters, and to mines, washeries and distributors for emissions from black coal consumed by small users. Under this option obligations would have to apply to mines, washeries and distributors (rather than to only one point in the supply chain; that is, only mines or

washeries or distributors) in order for coal supplied to large entities to be separately identified. However, most of the 200 entities that would be potentially liable under this approach would supply coal only to large emitters or to other coal suppliers. Therefore, they would report zero scheme obligations and thus incur few compliance costs.

Coal used by iron and steel manufacturers to produce coke and coal by-products cannot be separately identified by black coal suppliers (coal mines, washeries and distributors), which do not have complete information on end uses for their product. Therefore, scheme obligations for these emissions would, therefore, need to apply to iron and steel manufacturers. This approach would involve few additional compliance costs, as these entities are likely to be large emitters, who would already have scheme obligations for their direct emissions. Coal mines, washeries and distributors would need to net out the coal supplied to such entities.

The Government's preferred position is the second option, as it would achieve comprehensive coverage of black coal emissions while allowing large emitters to directly manage their scheme obligations. Further analysis and consultation with industry on the netting out arrangements would be required.

2.15 Preferred position

Scheme obligations for emissions from black coal combustion would be applied:

- to facilities with direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more
- to all coal mines, distributors, washeries, and producers of coke and coal by-products for emissions from small emitters.

Brown coal

There are only five coal mines supplying large power stations and only one Australian manufacturer of brown coal by-products, including brown coal briquettes. Brown coal by-products are used in a variety of small commercial settings. Brown coal char is used primarily in household barbecues, and coal-based fertiliser is used in agriculture.

The options for coverage of emissions from brown coal are:

- to place indirect obligations on suppliers only (five coal mines and one by-product manufacturer)
- to use a combination of direct and indirect obligations.

The first option would achieve comprehensive coverage and involve only six facilities. Under this option, large emitters would not directly manage their scheme obligations.

The alternative would be to allow large emitters to directly manage their scheme obligations, while the by-product manufacturer would be obligated for emissions from coal by-products consumed by small users. This option would also achieve comprehensive coverage. It would involve slightly higher compliance costs, but would increase scheme incentives for large emitters.

The Government's preferred position is the second option, as it would achieve comprehensive coverage of brown coal emissions while allowing large emitters to directly manage their scheme obligations. Further analysis and consultation with industry on the netting out arrangements would be required.

2.14 Preferred position

Scheme obligations for emissions from natural gas combustion would be applied to entities with facilities which have direct emissions of 25,000 tonnes of carbon dioxide equivalent a year or more, and to natural gas retailers and gas producers for emissions from gas supplied to small emitters, or to gas producers where they supply directly to small emitters.

2.5.6 Biofuels and biomass

Most biofuels are alternative transport fuels derived from renewable sources. The two main biofuels available in the Australian market are ethanol and biodiesel. Biofuels are used mainly as extenders for automotive petrol and diesel. Fuel ethanol is produced from sugars and starches and must be dehydrated to reduce the water content to acceptable levels for fuel use. Biodiesel is made by chemically combining vegetable oil or animal fat with an alcohol such as methanol or ethanol. Wood waste is the main source of biomass used for energy, although components of municipal waste and agricultural wastes are also used.

Under current international accounting rules, CO_2 emissions from combustion of biofuels and biomass for energy not included in national targets but reported for information purposes ('zero rated'), on the grounds that they are equivalent to the carbon sequestered through growth of feedstocks.[35]

Combustion of biofuel and biomass also releases very small amounts of non-CO_2 gases. While those gases comprise less than one per cent of combustion emissions, international accounting rules require that they be included in national inventories.

Some biofuels have very high life-cycle emissions because distillation and other production processes are very energy-intensive (and therefore emissions-intensive). In Australia, energy use contributes the great majority of life-cycle emissions associated with most biofuels; agriculture emissions (primarily from fertiliser used to grow feedstock) also contribute.

With comprehensive scheme coverage, the life-cycle emissions from the domestic production of biofuels would be addressed via the carbon price applied to those emissions–the carbon costs would be incorporated in the pump price of these fuels.

Given that life-cycle emissions would be addressed by comprehensive scheme coverage, emissions combustion of biofuels and biomass for energy could receive a 'zero rating', in recognition of the carbon sequestered in feedstocks. Therefore, the Government's preferred position is that scheme obligations would not apply to combustion of these fuels.

Biofuel is not currently imported. However, increases in the price of fossil fuels and of domestically produced biofuels as a result of the scheme may lead to biofuel imports, particularly if biofuels are able to make green marketing claims based on the zero rating of their combustion emissions.

The life-cycle emissions of imported biofuels are unlikely to be addressed, because most biofuel-producing countries do not have emissions targets. Those emissions can be extremely high if there is deforestation to make way for biofuel feedstock. The Government is aware of these issues and is considering policy options to ensure the sustainable production of biofuels used in Australia. Australia is also contributing actively to international efforts to reduce global emissions from deforestation, both through the United Nations Framework Convention on Climate Change and in partnership with regional governments through the International Forest Carbon Initiative.

2.17 Preferred position

Scheme obligations would not apply to emissions from combustion of biofuels and biomass for energy; they would receive a 'zero rating'.

2.5.7 Netting-out arrangements

Netting out arrangements would be required to give affect to a number of the Government's preferred coverage positions. Netting out arrangements are needed to fairly and efficiently allocate emissions obligations between upstream suppliers and large direct emitters. These arrangements need to avoid double-counting of emissions and gaps in coverage, and should involve tracking and reporting systems that do not impose unreasonable compliance costs.

One option that might assist netting out would be to require large direct emitters to register as liable entities and to indicate the emissions for which they will assume scheme obligations (see Chapter 5 for further discussion of liable entities).

Registrations may need to occur early in the year to enable the regulator to provide upstream suppliers with adequate notice of arrangements. In the following scheme year, upstream suppliers would need to net out fuel supplied to any registered entity from their own obligations.

Stakeholder feedback is sought on netting out arrangements.

2.6 Emissions from land use

The Government has indicated that it will consult the agriculture and forestry sectors on the question of their inclusion in the system and on the timeframe for their inclusion.

While the agriculture and forestry sectors are often thought of together, each involves very different issues, suggesting different timetables and approaches to coverage.

Before considering these issues, it is relevant to consider the international accounting framework for land-based emissions, particularly given the need for the scheme to contribute towards Australia's international climate change obligations.

2.6.1 Current international accounting

The Kyoto Protocol accounting rules are relevant to the design of the scheme because they determine which emissions sources and sinks count towards Australia's international commitments. Importantly, Kyoto Protocol accounting rules for land-based emissions are not comprehensive; they cover a limited set of emissions sources and sinks. These sources are as follows:

- Agriculture emissions (Annex A of the Kyoto Protocol) includes enteric fermentation (feed digestion) in livestock, manure management, rice cultivation, agricultural soils (for example, fertiliser use), prescribed burning of savannas, and field burning of agricultural residues
- Emissions from land-use change and forestry (Article 3.3 of the Kyoto Protocol) which includes net emissions from forests established since 1990 on land that was clear of forest on 31 December 1989, and from deforestation (deliberate removal of forest and replacement with non-forest land use).

Article 3.4 of the Kyoto protocol provides for additional activities that countries may elect to count towards their emissions target during the first commitment period. These elective activities are:

- forest management (plantation forests established before 1990 and all native forests under some form of management)
- revegetation (establishment of woody biomass that does not meet forest criteria)
- grazing land management (carbon stored in soil and vegetation on grazing land)
- cropland management (carbon stored in soil and crops).

If a country chooses to include any of the additional activities, it must also include, and report on, all emissions from all land nationwide on which those activities are undertaken. Australia has elected not to include these activities because of the risk that drought or bushfire could result in significant emissions from these sources during the Kyoto commitment period. Box 2.3 provides more detail on why Australia elected not to count emissions from Article 3.4 activities.

Box 2.3
Variability of emissions from Article 3.4 activities

Activities defined under Article 3.4 of the Kyoto Protocol may deliver gradual emissions reductions over time. However, natural events such as drought and fire result in the release of greenhouse gas emissions over much shorter periods. The risks of substantial emissions due to such events were judged to outweigh any potential emissions reduction benefits from counting Article 3.4 activities towards Australia's Kyoto Protocol commitments.

Article 3.4 applies an emissions accounting approach (except for forest management) that compares the net emissions and removals during the commitment period against the net emissions for 1990 multiplied by five. As a consequence, the estimated emissions outcome for the elective activities is strongly influenced by the emissions in 1990. Rainfall in many regions of Australia was above average in 1990, resulting in productive growth conditions with associated relatively low net emissions from relevant lands. Drier conditions from 2008 to 2012 compared to 1990 would result in negative national emissions outcomes. For cropland management, the outcome would only be positive if rainfall conditions from 2008 to 2012 consistently exceeded those in 1990.

Australia has a zero cap on forest management activities. That is, Australia could not report sequestration benefits due to forest management, but would have been required to report emissions. Extreme fires are a particular risk for emissions from forests. (Article 3.4 of the Kyoto Protocol).

This means that Australia accounts for only soil carbon under land-use change (Article 3.4 of the Kyoto Protocol) activities. The accounting framework for Australia's Kyoto target does not include carbon sequestration in other land areas, such as croplands and grazing lands.

Kyoto accounting rules do not recognise storage of carbon in harvested wood products; harvesting is treated as an emission at the time of harvest. Australia has long advocated an alternative accounting approach under which emissions from the breakdown of wood products are reported when (on release to the atmosphere) and where (in the country) they occur. Recognition of the carbon stored in harvested wood could be an advantage to timber growers. Arrangements would be needed to track and assign liability for emissions as wood products move through other sectors, so that the emissions from the decay of wood products or combustion of biomass are also accounted for in the national inventory and the scheme.

The Government will increase its efforts to change the international climate framework in ways that reflect Australia's particular circumstances, that are soundly based on science and that provide appropriate incentives to reduce emissions.

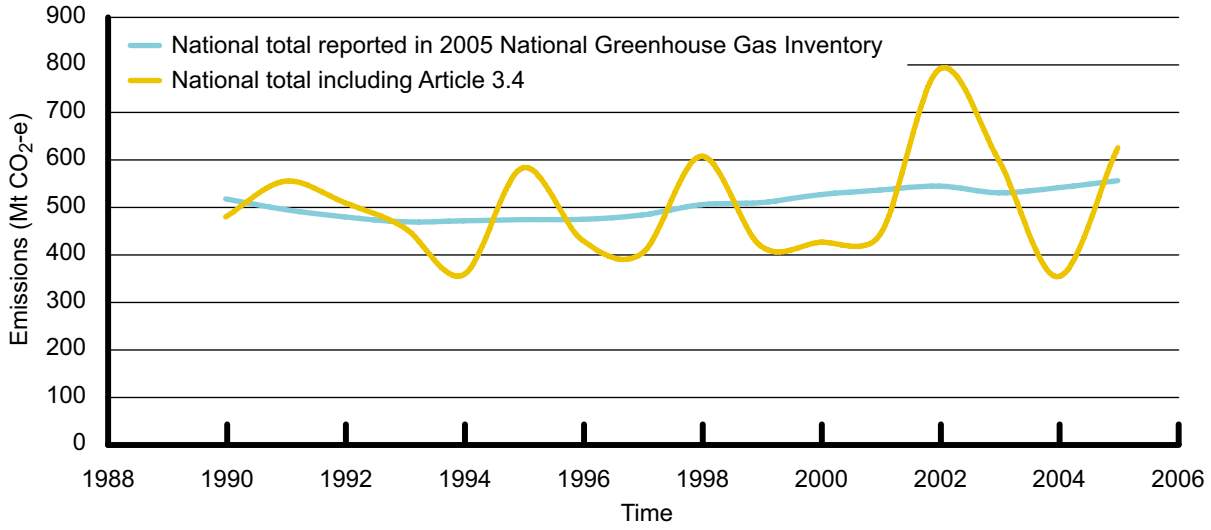
2.6.2 Possible evolution of international accounting rules

There is a general movement towards a more comprehensive and scientifically accurate international accounting framework, however, as negotiations are at a very early stage, the direction of any changes cannot be predicted.

Decisions will need to be made about the position Australia should take on the international accounting rules that should apply to measuring compliance with international obligations. Determining the best approach will involve consideration of the current risks in accounting for the variability of emissions from land systems (inherent in Article 3.4 of the Kyoto Protocol) and the impact that large variations in emissions would have on ongoing abatement incentives for farm businesses.

Figure 2.5 illustrates the strong potential variability of emissions in the national accounts that would result from full inclusion of Article 3.4 (the wavy yellow line). By contrast, the land-use change emissions from the limited scope of activities that are currently accounted for under Australia's Kyoto target are much more predictable. The flatter, blue line shows Australia's current inventory, which does not include Article 3.4 emissions.

Figure 2.5 Comparative national emissions, with and without Article 3.4 emissions



Source: National Greenhouse Gas Inventory 2006, Department of Climate Change

There are likely to be important opportunities to increase the carbon stored in agricultural soils. However, scientific research conducted in Australia suggests that, while there are opportunities for increasing and retaining agricultural soil carbon, Australia does not have the same sequestration potential as other countries, and there is significant risk of loss of soil carbon in times of drought or changed management practices.[36] Nevertheless, Australia should continue to investigate opportunities for improving soil carbon retention to provide maximum flexibility under future international accounting arrangements.

Further analysis of these issues will need to be undertaken when more is known about commitment periods and other rules.

2.6.3 Scheme accounting framework

Australia could consider including in its scheme emissions and removals that are not counted towards Australia's Kyoto obligations. For example, the scheme could account for the carbon stored in harvested wood products to create incentives for forestry. However, such an inclusion could undermine the international tradeability of carbon pollution permits.

If the scheme includes emissions and removals that are not counted towards Australia's Kyoto obligations, those efforts would not count towards Australia's international commitments. Because Australia would still need to meet its international commitments, it would have to tighten the scheme cap (with other participants bearing the burden) or buy international units equivalent to the permits issued for non-Kyoto sequestration. This could also limit the tradeability of Australia's permits, as other countries are unlikely to link with schemes that include emissions or adopt accounting approaches that are not internationally recognised.

The Government's preferred position is that the scheme should be consistent with the internationally agreed climate change framework and cover only domestic emissions sources and sinks that are counted in Australia's Kyoto Protocol emissions inventory.

Given the possibility of changes to the international climate change framework, the scheme should be flexible enough to include additional sinks and sources or accounting approaches that have been internationally agreed. As noted in Chapter 3, the market will need appropriate notice of any changes that will affect the amount of emissions in the scheme.

2.18 Preferred position

The scheme would cover only domestic emissions sources and sinks that are counted in Australia's Kyoto Protocol emissions account.

2.7 Agriculture emissions

Agriculture emissions make up approximately 16 per cent of Australia's emissions. Agriculture is the dominant source of methane (primarily from livestock) and nitrous oxide (mainly from agricultural soils).[37] Table 2.2 shows the sources of emissions from agriculture as reported in Australia's national (Kyoto) inventory for 2005.

Table 2.2 Emissions from agriculture

Source	Emissions (Mt CO2-e)
Livestock	**62.1**
Enteric fermentation (feed digestion)—cattle	44.0
Enteric fermentation—sheep	14.4
Enteric fermentation—other (for example, goats, horses)	0.3
Manure management	3.4
Agricultural soils	**16.6**
Direct soil emissions	
Synthetic fertilisers	3.3
Other (manure fertiliser, nitrogen-fixing crops, crop residues)	2.1
Animal production (nitrogen excretion on land)	4.3
Indirect emissions (leaching and runoff)	6.6
Other (soil disturbance)	0.3
Prescribed burning of savannas	**8.7**
Rice cultivation	**0.2**
Field burning of agricultural residues	**0.4**
Total	**87.9**

Source: National Greenhouse Gas Inventory 2006, Department of Climate Change

Agriculture emissions are highly variable in response to management practices and climatic conditions. For example, cattle breeds and feed types in tropical and subtropical regions differ from those in temperate regions, and have methane conversion rates that are significantly different. Nitrous oxide emissions from soils in major cereal-growing regions vary geographically and over time, according to different rainfall, soil types and fertiliser application rates. The agricultural sector includes more than 100,000 entities, most of which emit less than one $ktCO_2$-e/year.

These characteristics of agriculture emissions pose challenges for their inclusion in the scheme. If coverage of agriculture emissions proves impractical, the Government will consider alternative mitigation measures to ensure that all sectors of the economy make a contribution to meeting Australia's international obligations. Regulatory approaches to mitigation are unlikely to be least-cost and will have differential impacts within the sector. The Government is therefore inclined to move towards coverage of agriculture emissions, recognising that this will involve concerted effort and considerable resources from both the industry and the Government. Regardless of the policy approach,

additional support for research and development into mitigation options for the agricultural sector may be required.

Coverage options

Agriculture emissions could be included within the scheme in one of three possible ways. Obligations could be imposed:

- directly on farm businesses
- indirectly on upstream inputs such as fertiliser or on downstream food processors such as abattoirs
- by a combination of these approaches—the default point of obligation would be upstream or downstream, but large farm businesses would be given the option of managing their emissions obligations directly.

Choosing the way agriculture emissions are covered involves determining the relative importance of two strongly competing principles:

- Most of the sector's emissions are produced by thousands of small farm businesses, making it potentially costly and inefficient to impose obligations on emissions at the entity level.
  - Very few farm businesses would meet the minimum 25 kt CO_2-e/year threshold for reporting under the National Greenhouse and Energy Reporting System; indeed, many entities in the sector would produce less than 1 kt CO_2-e/year.
  - As there are certain fixed costs associated with scheme compliance (for example, emissions reporting and permit management), compliance costs for farm businesses would be many times greater than those for entities in other sectors.
  - A high threshold, set at a level that would exclude entities whose participation would not be cost-effective and would result in limited emissions coverage. On the other hand, a low threshold, designed to cover the bulk of emissions, could result in high compliance costs and introduce competitive distortions between farm businesses on either side of the threshold. For example, covering about 80 per cent of direct emissions from the beef, sheep, dairy and wheat industries would require participation in the scheme of around 45,000 farm businesses.
- There is a relatively weak relationship between emissions at upstream and downstream points in the supply chain and direct farm emissions; that is, management action and enterprise-specific characteristics can significantly affect the actual emissions associated with production and input variables, such as meat or milk production or fertiliser use. Therefore, moving the point of obligation away from the direct source of emissions could reduce the efficiency of the carbon price signal and potentially compromise the equity of the scheme (if broad emission defaults are applied).

A combined approach may be an alternative option. Under that approach, scheme obligations for agriculture emissions would be applied indirectly (upstream and downstream) as a default option, but large emitters would be given the option of reporting and directly managing their own emissions. The New Zealand Government

is currently working with its agricultural sectors to explore the viability of such an approach.[38]

At this stage, the Australian Government considers that general coverage of agriculture emissions at a farm level is unlikely to be practical because of the compliance costs for individual farm businesses. Furthermore, the use of farm emissions thresholds could cause competitive distortions. Applying scheme obligations at other points in the supply chain may effectively deal with compliance cost issues, and emissions measurement systems could be designed to recognise abatement activities.

If an indirect approach is adopted, it will be important to ensure that reductions in the emissions intensity of production as a result of management practices and use of low-emissions technologies are signalled to the liable entity and reflected in emissions estimates. For example, farm businesses that adopt low-emissions management practices could be accredited, and emissions from their produce could be estimated accordingly by liable upstream or downstream entities.

Abatement incentives and the fairness of the scheme can also be improved by progressively adopting more differentiated estimation methodologies. Improvement of emissions estimation capability should therefore be a priority ahead of coverage of agriculture emissions, along with working with the sector to improve its mitigation opportunities.

If an indirect approach is to be considered, further analysis will be required to identify cost-effective points of obligation in the supply chain. Thresholds may be required to ensure that small processors, for example, are not included in the scheme. Further work would also be required to develop emissions estimation and reporting capability and mechanisms for recognising on-farm mitigation actions.

Timing of coverage

Coverage of the sector will not be possible from scheme commencement in 2010, as further analysis will be required to identify discrete and comprehensive points of obligation in the supply chain and to have ready more reliable and cost-effective methods of emissions estimation and reporting.

The Garnaut Climate Change Review does not suggest a timetable for inclusion of agricultural emissions but rather that coverage be linked to progress on emissions estimation. However, adopting an indicative timetable for coverage would provide momentum towards the development of the emissions estimation and reporting arrangements required for coverage, and of complementary efforts to ready the sector for scheme inclusion.

Too short a timetable would create implementation risks, while too long a timetable could lead to less forward preparation of the sector and increase pressure to introduce alternative mitigation measures.

Over the next few years, more will be known about the direction and likelihood of changes to the international accounting framework for land-based sectors. A provisional 2015 date of inclusion would allow emissions estimation capabilities and accounting arrangements to be developed in this context. New Zealand has undertaken extensive

consultation with its agriculture sector and made considerable progress towards coverage of its agriculture emissions in 2013.[39] A provisional 2015 date for the inclusion of agriculture emissions in the Carbon Pollution Reduction Scheme would allow a similarly extensive process of policy development and consultation with the agriculture sector.

To enable coverage of agriculture emissions in 2015, final decisions on coverage would need to be made by 2013. To support decision making, emissions estimation and reporting arrangements will need to be developed and put in place as soon as is practical. This will give the agriculture sector time to build capacity to estimate emissions and ensure the quality of emissions data prior to coverage.

The Government wishes to explore the inclusion of agriculture emissions by 2015, with the point of obligation generally imposed off-farm, at some other point in the supply chain (for example, on fertiliser suppliers, abattoirs, dairies and beef exporters). Further consultation with industry will be required on:

- the practicalities of this approach, including how to identify appropriate, cost-effective points of obligation in the supply chain
- the scope for incorporating direct, farm-level management of emissions in the context of a generally indirect approach to the point of obligation
- necessary improvements in emissions estimation methods and development of efficient administrative systems to support the approach outlined.

2.19 Government disposition

The Government is disposed to include agriculture emissions in the scheme by 2015 and to make a final decision on this in 2013.

Given the compliance costs that would be involved if scheme obligations were to apply at farm-level, the Government seeks stakeholder views on the merits of an approach to coverage that would apply obligations generally off-farm, at some other point in the supply chain (for example, on fertiliser suppliers, abattoirs, dairies and beef exporters). The Government recognises that any approach will also need to provide appropriate incentives for on-farm abatement.

2.8 Forestry

2.8.1 Reforestation

Under the Kyoto Protocol, parties can count only increases in forest carbon over the commitment period (2008–12) from forests established after 1 January 1990 on previously cleared land ('reforestation', as defined for the first commitment period of the Kyoto protocol).[40] Reforestation sequestration and emissions (for example, from harvesting, pests or fire) are relatively well understood, and reliable, cost-effective methods of estimating these are readily available.

As noted in Section 2.6, management of native forests is an activity listed under Article 3.4, so Australia does not count increases in sequestration or emissions from native forests towards its international commitments. Similarly, increases in sequestration in forests established prior to 1990 are not counted towards Australia's international commitments. As the Garnaut Climate Change Review notes, emissions estimation methodologies are less well developed for these forests.

As indicated in Section 2.6.3, the Government's preferred position is that the scheme includes only emissions sources and sinks that count towards Australia's international commitments.

Reforestation (as defined under the first commitment period of the Kyoto protocol) could be covered by the scheme. Forest landholders would receive permits for net sequestration that is counted towards Australia's international commitments, and would be required to surrender permits for net emissions from the forest, should emissions exceed sequestration.

Reforestation would differ from other covered activities because it provides a net carbon sink and carbon dioxide emissions (from harvesting or fire) typically match prior carbon sequestration in the forest. Therefore, whereas other covered entities would be required to surrender permits for their emissions, forest landholders would receive permits for their net sequestration. Coverage of reforestation would thus provide a mechanism for crediting increments in forest carbon.

The Garnaut Review suggests that reforestation be eligible to generate offset credits. This would achieve a very similar outcome to scheme coverage – that is, crediting increases in forest carbon – but would involve additional compliance costs for both industry and government. These would arise because of the need to demonstrate that forest carbon meets international offset standards, namely that it will be permanently maintained and is additional to business-as-usual.

Implications of coverage

Covering reforestation would create incentives to establish new forests. A shift towards less emissions-intensive activities, including farm forestry, is an intended consequence of the scheme, as it would reflect an efficient allocation of resources taking into account the carbon price.

Australian Bureau of Statistics figures show that the number of farming families in Australia decreased by 22 per cent between 1986 and 2001, leading to widespread declines in the rural population.[41] However, a study by the Bureau of Rural Sciences into the socioeconomic impacts of plantation forestry[42] found that an expansion of plantations can actually increase rural populations, especially where processing industries are associated with the plantations.[43]

Some new forests would be commercial plantations, while others would be conservation and environmental plantings that enhance the productivity of degraded farm lands. Well-designed plantings can also make other positive contributions for example in salinity mitigation and biodiversity conservation.

While forests have important environmental benefits, including improved water quality, there are concerns that a shift in land use towards forestry could have some unintended consequences for water availability.

The National Water Initiative (NWI) recognises the impact of forest planting, and governments have agreed to assess the significance of water interceptions on catchments and aquifers by no later than 2011 and to apply appropriate planning management and regulatory measures where necessary. Governments have recently agreed to accelerate this work in areas where interception poses a significant risk to the success of water resource plans.[44]

The NWI requires that water entitlements be held for significant interceptions (including plantations) in catchments that are overallocated or are approaching overallocation. Over time, NWI reforms should result in full-cost pricing of water for all land-use purposes. As those reforms are implemented, plantation owners, like other water users, will need to factor the costs of water and other inputs into their production decisions.[45]

Water and natural resource management requirements will continue to be determined through the Council of Australian Governments and implemented by the relevant state and territory government authorities. Operational implementation of the NWI requirements is a matter for the states and territories and progress towards it is varied.

The scheme regulator will not have the capacity to assess the natural resource management implications (for water or biodiversity) of forest sequestration activities. For this reason, and to ensure that multiple regulators do not make decisions on the same issues, the Government believes that the scheme regulator should not be required to take into account natural resource management issues in assessing whether forests should receive permits, and should only have powers relating to climate change outcomes. The existence of separate frameworks for natural resource management complements such an approach.

Coverage options

There are two broad options for covering reforestation:

- mandatory coverage
- voluntary 'opt in'.

Mandatory coverage would bring a large number of entities into the scheme, depending on the threshold for inclusion in the scheme. Many entities would incur compliance costs despite having few, if any, net emissions and little to gain from inclusion.

A voluntary approach is possible for forestry because, unlike other sectors of the economy, forests are likely to sequester more carbon than they emit. Forest landholders, including Indigenous land managers, therefore have an incentive to voluntarily include their forests in the scheme. A voluntary approach would allow forest landholders to determine for themselves whether participation in the scheme would benefit them.

The benefits of scheme participation would be greatest for owners of new forests (which have the greatest sequestration potential) who intend to maintain them (for harvest or non-harvest purposes), as those forests can provide ongoing carbon sequestration. The benefits for harvest plantations would depend on the flexibility of harvesting schedules, future log prices and future carbon prices. For example, scheme participation might not be beneficial for single-rotation plantations, such as those owned through managed investment schemes, because of the risk that the value of scheme obligations for harvest emissions would exceed the value of permits received for sequestration. Scheme participation would not be beneficial for forest landholders intending to convert land to an alternative use, and might not be cost-effective for owners of very small forest areas. Box 2.4 outlines some of the implications of scheme participation for different forests.

Box 2.4
Issues for forest landholders

Participation in the Carbon Pollution Reduction Scheme would not be beneficial for all forest landholders. This scheme has different implications for various forestry activities.

If the price of carbon increases faster than the rate of interest, the value of future scheme obligations may be greater than the value of the permits generated previously. Forest growers would need to take this into account when planning forest establishment and management.

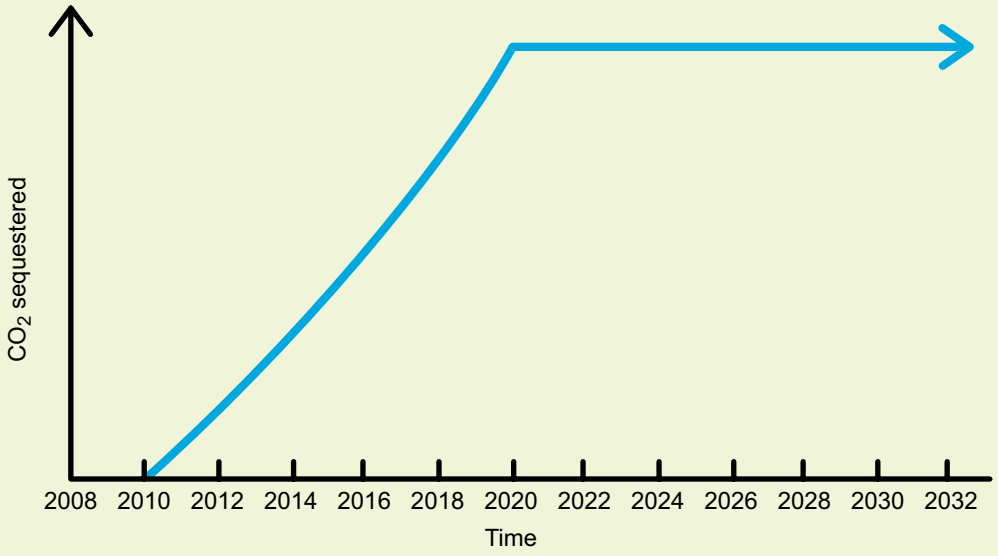
For the purpose of illustration, the diagrams below are stylised examples of single-stand forests.

Box 2.4
Issues for forest landholders (continued)

Forests grown for non-harvest purposes

Forests may be grown and maintained for such purposes as carbon sequestration, for other environmental reasons or to improve the productivity of farmland. Forest landholders could generate permits from sequestration while these forests are growing. They would only have to surrender permits in the event of net emissions, for example, if the land is converted to another (non-forest) use.

Forest grown for non-harvest purposes



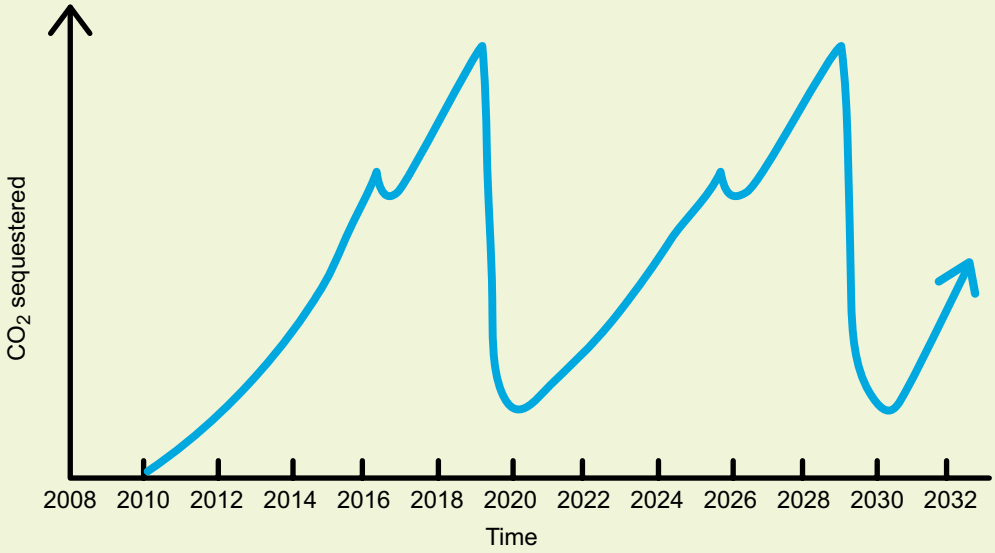
Plantations that are re-established over time

Establishing plantations on land previously clear of forest would increase the average carbon sequestered in the landscape over the period that the plantation is in place.

Forest landholders could generate permits during the initial growing phase and would have to surrender permits for net emissions for example if the land is converted to an alternative use. Accounting and reporting arrangements could have a significant impact on the ability of plantation owners to manage scheme obligations over time.

Box 2.4
Issues for forest landholders (continued)

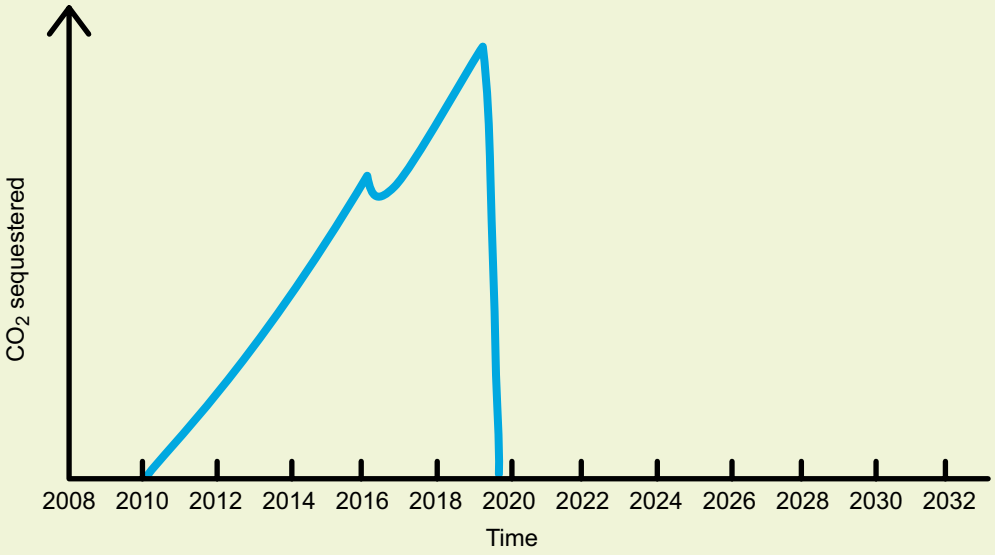
Plantation – re-established over time



Plantations that are not re-established

Scheme participation may involve risks for plantation forests that are not re-established after harvest, because the value of scheme obligations for net emissions (which would occur if the forest is not re-established) could be greater than the value of permits previously received for sequestration.

Plantation – not re-established

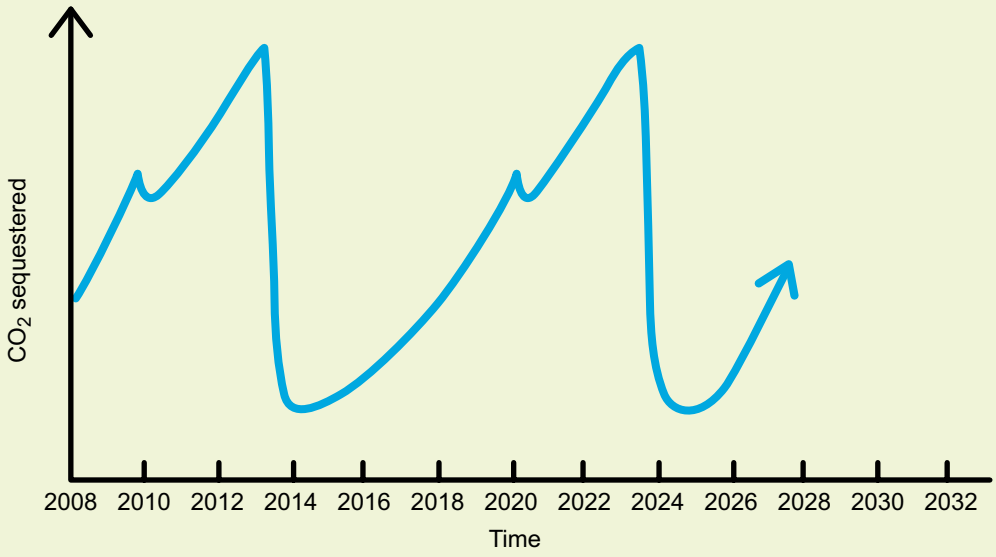


Box 2.4
Issues for forest landholders (continued)

Established plantations

Scheme participation would be less beneficial for forests that are already well established, as they have less capacity than new forests to sequester additional carbon. Scheme rules, particularly rules that determine whether obligations to surrender permits can exceed permits received for sequestration, would have a significant impact on the value of participation for owners of these forests.

Established forest



Given that a mandatory approach would not be beneficial for all forest landholders, it could reduce incentives to establish or maintain forests, which would have negative implications for Australia's emissions profile.

Under a voluntary approach, forest landholders would not be able to opt out of the scheme without surrendering permits for all potential obligations.

If forest landholders choose not to participate, the increases in carbon sequestration and emissions from their forests would not enter the scheme but would be counted towards Australia's international obligations.

2.20 Preferred position

All reforestation (as defined for the first commitment period of the Kyoto Protocol) would be included, on a voluntary basis, from scheme commencement in 2010, with design details to be determined.

Detailed design issues

Detailed design issues such as reporting and acquittal periods, accounting rules and participation thresholds would have a significant impact on the costs, benefits and risks associated with scheme participation.

Emissions from forests as a result of harvest or fire can be significant and may be difficult for some forest landholders to manage, creating risks of non-compliance. Different reporting and acquittal periods could affect the ease with which these risks can be managed. One option would be for forest landholders to report annually and receive or surrender permits accordingly. Under this approach, forest landholders could have very significant scheme obligations in the year that a forest is harvested or burned. However, many commercial forest growers operate multiple stands of forest, with different age classes and geographic spread, to ensure a constant supply of wood and to manage risks such as fire. Scheme obligations could be more easily managed under these conditions.

Annual reporting would also involve ongoing compliance costs for owners of mature forests, which would no longer be sequestering additional carbon and have very few emissions. On the other hand, reporting obligations could be streamlined using the National Carbon Accounting System.

An alternative approach would be to allow forest landholders to report (and receive or surrender permits) less frequently for example every five years or by the end of the international commitment period. Less frequent reporting would reduce compliance costs, particularly for owners of mature forests. However, owners of growing forests could report annually, to obtain permits as sequestration takes place. This approach would also make it easier for forest landholders to manage scheme obligations, as obligations would arise only in relation to net emissions over the reporting period —that is, emissions minus sequestration.

To ensure that longer reporting periods do not allow forest landholders to avoid scheme obligations, disturbances such as harvesting or fire and any subsequent replanting, regeneration or conversion of forest land to an alternative use would also need to be reported.

Under current international accounting rules, reported emissions from any given area of forested land cannot exceed sequestration over the commitment period (Conference of the Parties to the Kyoto Protocol held at Marrakesh ('Marrakesh Accords'). However, it is not yet certain whether this rule will be part of the post-2012 climate change framework. The Government would need to decide whether this rule should apply under in the Australian scheme beyond the first commitment period. In the absence of such a rule, owners of forests established before the scheme begins would need to consider the risk that future emissions from harvest or fire could exceed increases in carbon sequestration recognised under the scheme.

The Australian definition of a forest for the purpose of Kyoto Protocol accounting specifies a minimum area of only 0.2 hectares, tree crown cover of 20 per cent and a tree height of two metres.[46] While a higher threshold could be considered for scheme participation, using this definition as the threshold would allow most farm forestry, conservation and environmental plantings into the scheme, which would benefit

rural communities. Scheme administrative costs and implementation risks could be minimised through the use of the National Carbon Accounting System and National Carbon Accounting Toolbox to facilitate reporting.[47]

Stakeholder feedback is sought on reporting and acquittal periods, accounting rules, thresholds and other design details.

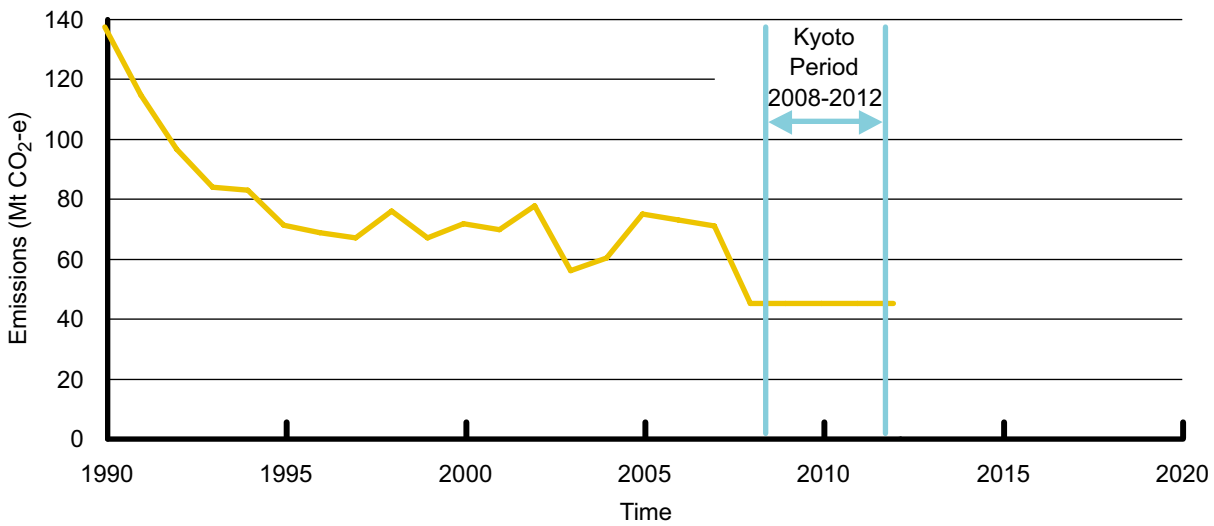
2.8.2 Deforestation

Under the Kyoto Protocol rules, Australia is liable for emissions from deforestation (also called 'land clearing'), which is the conversion of forest land to an alternative, non-forest land use. Once land is deforested, sequestration through regrowth and emissions from re-clearing are tracked in the national Kyoto accounts to determine net emissions from deforestation at the end of the commitment period.[48]

Deforestation currently accounts for around 11 per cent of Australia's emissions.[49] Most land clearing is of native forest for agricultural purposes (principally cattle grazing), although deforestation also occurs for other reasons, such as to provide land for urban development and to put in power lines. Existing state restrictions on clearing of 'remnant' or mature forests mean that many deforestation emissions after 2007 are from forests that have previously been subject to clearing.

Governments and land managers have taken steps to significantly reduce land-clearing rates in the past 20 years to conserve biodiversity and to protect soil and water quality. Department of Climate Change projections are for annual emissions from land clearing of 44 Mt CO_2-e for the 2008–12 period and beyond, down significantly from 136 Mt CO_2-e in 1990. Figure 2.6 shows the decline in deforestation emissions since 1990 and the projected rate of deforestation over the Kyoto Protocol period.[50]

Figure 2.6 Deforestation emissions since 1990



Source: National Greenhouse Gas Inventory 2006, Department of Climate Change

These very significant reductions in land-clearing emissions are consistent with Australia's strong international position on reducing emissions from deforestation.

In effect, current Australian land-clearing restrictions represent an alternative mitigation policy for the sector.

Moreover, under the proposed approach to reforestation, forest landholders who opt in to the scheme would not be allowed to opt out unless they surrender permits for all potential emissions from the forest. Therefore the scheme would cover deforestation emissions from many eligible Kyoto forests.

Covering emissions from deforestation of other existing forests would create incentives to further reduce rates of deforestation and, because avoided deforestation is likely to be one of the most cost-effective forms of abatement, would reduce the cost of the scheme. It could also have other positive environmental benefits.

However, there are a number of practical obstacles to including deforestation in the scheme.

The areas cleared annually on individual landholdings range from less than one hectare to thousands of hectares. Depending on the thresholds for inclusion in the scheme, covering deforestation could create thousands of potentially liable entities, as there are no obvious points of obligation elsewhere in the supply chain.

The need for thresholds to contain scheme costs would mean that a significant proportion of deforestation would not be covered. Around eight Mt CO_2-e of projected emissions is attributable to the clearing of relatively small land areas under exemptions to state land-clearing restrictions for example to establish fire breaks. In addition, clearing is also undertaken to provide fodder in times of drought. It may not be efficient to impose scheme obligations for clearing that occurs under such circumstances. The ambit of existing state restrictions on clearing of remnant or mature forests means that most of the balance of emissions is from forests defined as regrowth.

Monitoring, reporting and compliance arrangements would be complicated by the periodic nature of deforestation. Unlike emissions from industrial facilities, emissions from deforestation are difficult to predict.

Announcing plans to include emissions from deforestation in the scheme would also create powerful incentives for pre-emptive land clearing if coverage was in prospect (where allowed under state and territory regulations) in order to avoid a future obligation. This could have a range of negative environmental consequences, as well as increasing emissions in the Kyoto Protocol period.

For these reasons, the Government prefers not to include emissions from deforestation. However, given the potential for low-cost abatement in the sector, the Government will investigate options for incentive-based mechanisms to further reduce deforestation. Consistent with the Government's international approach incentive-based mechanisms could include offsets from avoided deforestation.

2.21 Preferred position

After careful deliberation the Government does not propose to include deforestation in the Carbon Pollution Reduction Scheme. Australian deforestation emissions have reduced markedly since 1990, largely due to increased protections against land clearing.

2.9 Broad coverage and offsets

Offset credits could potentially be created by those sectors not covered by the scheme.

Allowing offsets would create incentives to reduce emissions from uncovered activities, and lower carbon costs within the scheme by giving liable entities access to a broader range of abatement opportunities.

Domestic offset projects do not add to total national abatement because offsets are issued in addition to the scheme cap and therefore allow an increase in emissions within the scheme. In other words, offset projects outside the scheme allow less abatement to be done within the scheme and, other things being equal, will reduce the price of permits. However, the cost of reducing emissions will still be borne by firms whose emissions are covered by the scheme. By contrast, abatement in uncovered sectors that does not generate scheme offsets would increase national abatement.

The Government's preferred position is that offsets be considered only in circumstances where it is not possible to:

- cover a particular source of emissions
- cost-effectively mitigate emissions through alternative measures, to more efficiently and equitably spread the burden of abatement across the economy.

Offsets can only come from emissions sources that are outside the scheme. The very broad sectoral coverage proposed for the scheme means that there is inherently less scope to pursue offset activities. Nevertheless, some emissions sources are likely to remain outside the scheme. For example, it is proposed that emissions from deforestation not be covered. It would also be difficult to cover emissions from savanna burning because the complexity of property rights for Indigenous lands would make it difficult to identify single commercial entities that could take on scheme obligations for those emissions.

Allowing forests to opt in to the scheme, while similar to offsets in its approach to crediting forest abatement, is less complex to administer. Therefore, a separate category of domestic offsets is not proposed for reforestation activities. However, voluntary coverage of forestry could benefit many farmers and entities that have established carbon sink forests to generate offset credits.

For a sector such as agriculture, which the Government has a disposition to include in the scheme at a later date, the decision to include offsets depends on:

- the precise timeframe for coverage
- whether offsets are an appropriate transitional strategy for a sector coming into the scheme
- whether the associated administrative costs outweigh the benefits.

The magnitude of the benefits from offsets will depend on the availability of cost-effective mitigation options and on whether and when emissions will be included in the scheme. If agriculture emissions sources and sinks are to be included relatively soon after the scheme begins, there will be little opportunity for the sector to benefit

from offsets in the interim period. This is particularly the case because cost-effective mitigation options are not yet widely available for most agricultural sectors.

Offset credits are rewards for reductions in emissions measured against an assumed baseline. Offset schemes are administratively complex and require considerable judgement to determine baselines – 'what would have happened in the absence of the offset project'. Determining these baselines is inherently subjective, increasing the risk that the scheme does not promote genuine abatement.

To maximise the credibility of scheme offsets, internationally recognised standards would need to apply. These would ensure that offsets could only be issued for abatement that is measurable, has actually occurred, is additional to business-as-usual and is permanent (that is, is not subsequently reversed). This is important because scheme offsets could be used interchangeably with permits. Offsets therefore involve relatively high compliance costs both to project proponents and to the scheme regulator, for approving, monitoring and verifying each offset project to ensure that abatement meets the required standards.

Offsets would make only a limited contribution to the development of emissions estimation capacity. Offsets require entities to estimate abatement relative to a baseline, whereas participation in the scheme requires them to estimate all emissions from covered activities. On the other hand, allowing offsets could encourage firms to make greater efforts to identify abatement opportunities in the lead-up to scheme commencement. However, imminent coverage would also generate such incentives.

Allowing offsets prior to coverage could also complicate the subsequent transition into the scheme because coverage could then involve the loss of offset revenue at the same time that entities must take on scheme obligations. In addition, establishing an offsets regime could divert industry from more critical coverage issues and add to scheme complexity, creating implementation risks.

The Government has indicated its predisposition to cover agriculture emissions from 2015. That timetable would not allow time for the scheme to include offsets from agriculture emissions before coverage of those emissions.

The Government's preferred position is to consider the scope for offsets from other emissions sources in 2013 following final decisions on coverage of agriculture emissions.

The Government is committed to facilitating the participation of Indigenous land managers in carbon markets and will consult with Indigenous Australians on the potential for offsets from reductions in emissions from savanna burning and forestry opportunities under the scheme.

The Kyoto Protocol's joint implementation mechanism allows firms to trade in credits from offset projects in developed countries. The scope for allowing entities to participate in the joint implementation projects is therefore related to whether domestic offsets will be a feature of the Australian scheme. (Chapter 6 considers joint implementation in more detail).

Voluntary carbon market participants–that is, firms and individuals that voluntarily buy abatement (usually in the form of carbon offsets)–can trade in offsets that are

not recognised under the Carbon Pollution Reduction Scheme. The Government will establish a standard for offsets for the voluntary market. Participants in the voluntary carbon market could also purchase and retire carbon pollution permits. Chapter 3 includes an assessment of who could buy permits and Chapter 5 looks at whether permits could be voluntarily retired.

2.22 Preferred position

The scheme would not include domestic offsets from agriculture emissions in the period prior to coverage of these emissions.

The Government would consider the scope for offsets from emissions sources that cannot be included in the scheme in 2013, following final decisions on coverage of agriculture emissions.

The Government is committed to facilitating the participation of Indigenous land managers in carbon markets and will consult with Indigenous Australians on the potential for offsets from reductions in emissions from savanna burning and forestry opportunities under the scheme.

Endnotes

1 These alternative, mandatory mitigation measures are unlikely to be as cost effective as market-based approaches such as emissions trading and are likely to increase overall abatement costs.

2 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

3 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

4 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme*, 2006.

5 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

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8 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

9 AD Ellerman and PL Joskow, *The European Union's Emissions Trading System in Perspective*, PEW Center of Global Climate Change, 2008.

10 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

11 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

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13 Some greenhouse gases are not covered by the Kyoto Protocol: hydrochlorofluorocarbons (HCFCs), which are controlled under the Montreal Protocol, and volatile organic compounds (VOCs), which are emitted as gases from certain solids or liquids, such as paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials, furnishings and office equipment. Water vapour is not covered by the Kyoto Protocol because it is not human-induced.

14 Intergovernmental Panel on Climate Change, *Fourth Assessment Report: The Physical and Science Basis*, 2007.

15 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

16 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

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18 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme*, 2006.

19 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

20 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

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22 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

23 An international voyage means a voyage where either the port of embarkation or the port of disembarkation is not within Australia.

24 Bureau of Infrastructure, Transport and Regional Economics.

25 Dargay, Joyce and Gately, Dermot, *The demand for transportation fuels: imperfect price-reversibility?, Transportation Research Part B: Methodological*, Volume 31, Issue 1, 1997.

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27 Department of Climate Change, *National Inventory Review 2006*.

28 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

29 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

30 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

31 Hyder Consulting, *Review of Methane Recovery and Flaring from Landfills*, October 2007.

32 Hyder Consulting, *Options for covering waste facilities under and emissions trading scheme*, June 2008.

33 Hyder Consulting, *Options for covering waste facilities under and emissions trading scheme*, June 2008.

34 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

35 Intergovernmental Panel on Climate Change, *Good Practice Guidance*, 1996.

36 There may be large releases of carbon dioxide from the soil following extended dry periods or when soil is disturbed, for example through cultivation or when long-term pasture land is converted for cropping.

37 Department of Climate Change, *National Greenhouse Gas Inventory*, 2006.

38 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

39 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

40 The Kyoto Protocol rules define 'afforestation' as well as 'reforestation'. Both terms refer to the establishment of forest since 1990 on land that was previously clear of forest.

41 Bureau of Statistics.

42 Bureau of Rural Sciences, *Socioeconomic impacts of plantation forestry*, 2005.

43 Bureau of Rural Sciences, *Socioeconomic impacts of plantation forestry*, 2005.

44 National Water Initiative: http://www.nwc.gov.au/nwi/index.cfm#overview.

45 National Water Initiative: http://www.nwc.gov.au/nwi/index.cfm#overview.

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3. Carbon market

A key objective of the Carbon Pollution Reduction Scheme is to establish a market for carbon so that Australia's emissions may be reduced in a cost-effective way. A more efficient carbon market can reduce the overall cost of the abatement task to the economy. This chapter discusses options and proposals for enhancing the efficiency of the carbon market.

The Carbon Pollution Reduction Scheme will establish a market for greenhouse gas emissions, commonly known as a 'carbon market'. A well-functioning, efficient carbon market will allow the scheme to achieve emissions reductions in a cost-effective way.

- Section 3.1 of this chapter discusses the elements of an efficient carbon market.
- Section 3.2 discusses price volatility in the carbon market.
- Section 3.3 discusses the proposed nature of carbon pollution permits and how this will enhance the efficiency of the market.
- Section 3.4 discusses market mechanisms for adding flexibility to the carbon market.
- Section 3.5 discusses the use of a price cap in the scheme.

3.1 Market efficiency

A well-functioning, efficient carbon market will allow the scheme to achieve emissions reductions in a cost-effective way. Market efficiency involves two interdependent elements: allocative efficiency and efficient price discovery (or information efficiency).

3.1.1 Allocative efficiency

Allocative efficiency refers to the market's capacity to channel resources—in this case, permits—to their highest value uses across the economy and through time at low cost and minimal risk. That is, emissions are reduced by those best placed to abate, in the period that costs them least. A market that achieves these objectives is said to be allocatively efficient.

The Government can play a role in promoting allocative efficiency in the scheme. Box 3.1 lists some guidelines for Government policy to help promote an allocatively efficient market.

Box 3.1
Guidelines for promoting an allocatively efficient carbon market

Secure and transferable property rights

Permits must be tradeable if there is to be a carbon market. Tradeability requires secure and clearly defined property rights and mechanisms for recording changes in ownership.

If property rights are secure, market actors can have confidence that they will receive the benefits flowing from their investments. Investors will be less likely to take commercial risks if property rights can be easily overturned or are ill defined.

Credible commitment to ongoing emissions constraints

Government constraints on emissions affect the level of demand for permits in most carbon markets. Those constraints are the key drivers of the carbon price. Therefore, credible scheme rules and institutions help underpin the value of permits.

Simplicity of operation

Clear and simple rules would reduce transaction costs. By contrast, scheme rules that are ambiguous or contradictory could generate uncertainty and increase compliance costs for market participants.

Integration with other markets

Emissions reduction objectives will be achieved in a more cost-effective way when resources are able to flow freely between markets. This happens when inconsistencies in the regulation of the domestic carbon market and the various other domestic and international financial, commodity and product markets are reduced.

For example, taxation and accounting arrangements will need to be developed for permits. Those arrangements will promote the efficient operation of the market if their effect on the market is neutral—that is, if they do not create incentives that interfere with the carbon price and other market signals. (Tax and accounting issues are discussed in detail in Chapter 11.)

3.1.2 Efficient price discovery

For permits to flow to their highest value uses, the carbon price also needs to reflect all available information.

Provision of relevant market information and predictable medium-term policy will assist financial market analysts and scheme participants to identify and understand the overall supply and demand conditions for permits facilitating efficient price discovery.

In a properly functioning market, market participants have incentives to seek out and analyse relevant information. However, some information is known only to the Government. The Government can promote efficient price discovery by providing price-relevant information to the market in a timely manner, and ensuring that the information is available to the whole market. If information is provided to only some market participants, those market 'insiders' would enjoy an informational advantage over other participants.

Price discovery will be more efficient if the market is given significant advance notice of changes to the climate change policy framework. This would allow the market time to factor such changes into future prices and to adjust investment decisions accordingly. Box 3.2 lists types of information that would be likely to have a material impact on the carbon price.

Box 3.2
Government policy guidance

Policy influencing emissions demand and supply	Market guidance: preferred positions
Medium-term national target range and indicative national emissions trajectory	At the end of 2008, in the context of the white paper the Government will announce a medium-term national target. The Government will announce an indicative national emissions trajectory to provide broad guidance on the pathway towards the medium-term target range (see Chapter 4).
Expansion of coverage	The Government proposes to announce in advance the detailed criteria (or decision rule) on which expansion will be based (see Chapter 13).
Caps	Scheme caps would be set and announced for a minimum period of five years at any time, with scheme caps extended by one year, each year, as required to maintain a minimum five-year certainty period (see Chapter 4).
Gateways	Ten years of gateways would be provided, beyond the minimum five years of scheme caps, to be extended by five years, every five years, as part of a strategic review of international conditions and Australia's likely future international commitments (see Chapter 4).

Box 3.2
Government policy guidance (continued)

Policy influencing emissions demand and supply	Market guidance: preferred positions
Measurement methodology	Appropriate notice would be given before mandatory minimum standards for emissions estimation methodologies are imposed or increased (see Chapter 5). Notice would be provided before major changes to estimation methodologies take effect. This would occur in the context of the five-yearly scheme reviews (see Chapter 13). Smaller revisions to methodologies would be made on an annual basis (see Chapter 5). Should an entity elect to use a more precise emissions estimation method than required, that methodology would be the minimum methodology for that entity for a period of four years (Chapter 5).
International linking	International linking arrangements would be set and announced for a minimum period of five years (see Chapter 6).
Registry/National Greenhouse and Energy Reporting System data	Scheme emissions aggregates (total emissions, banking, borrowing, auction issuance and prices) would be published annually (see Chapter 5).
Emissions reports and compliance information	Quantity of free permits received by each entity and/or by industry sector. The Government will also consider providing: • emissions by liable entities at the facility level (see Chapter 5); • total shortfalls in units surrendered by liable entities; and • extent and nature of non-compliance with the scheme.

The Government seeks specific feedback on whether the scheme regulator should publish the following information that would assist in the development of the permit market:

- quantities and prices of carbon pollution permits auctioned by the regulator;
- the quantity of free carbon pollution permits received by each entity and/or by industry sector;
- total shortfalls in permits surrendered by liable entities; and
- extent and nature of non-compliance with the scheme.

3.1.3 Development of the market

As with any market, the carbon market will involve transaction costs, or the use of resources that might have been used more productively elsewhere.

In a well-designed market, transaction costs would normally fall over time as financial and other service providers develop new financial products and find ways to deliver services more efficiently. Market development is also likely to include the deepening of the primary market and the establishment of secondary markets. This occurs as more firms take advantage of the carbon market to manage their scheme obligations. As the carbon market develops, firms are likely to have more, and increasingly efficient, avenues for managing their exposure to risk.

3.2 Price volatility

Under an emissions trading scheme, the carbon price will vary. The scheme is designed to constrain only the quantity of emissions, while allowing the market to set the carbon price.

The price of permits will adjust to reflect changes in market expectations of overall supply and demand for permits—that is, the carbon price will reflect the market's best estimates of both the current and future costs of reducing emissions in accordance with the scheme cap.

Market expectations about demand will be affected by changes in the cost of abatement technology, economic growth and opportunities for international linking. Expectations about supply will be affected by changes in the stringency of the cap and scheme coverage. Market expectations will also be influenced by factors that affect financial asset prices more generally, such as inflation and interest rates.

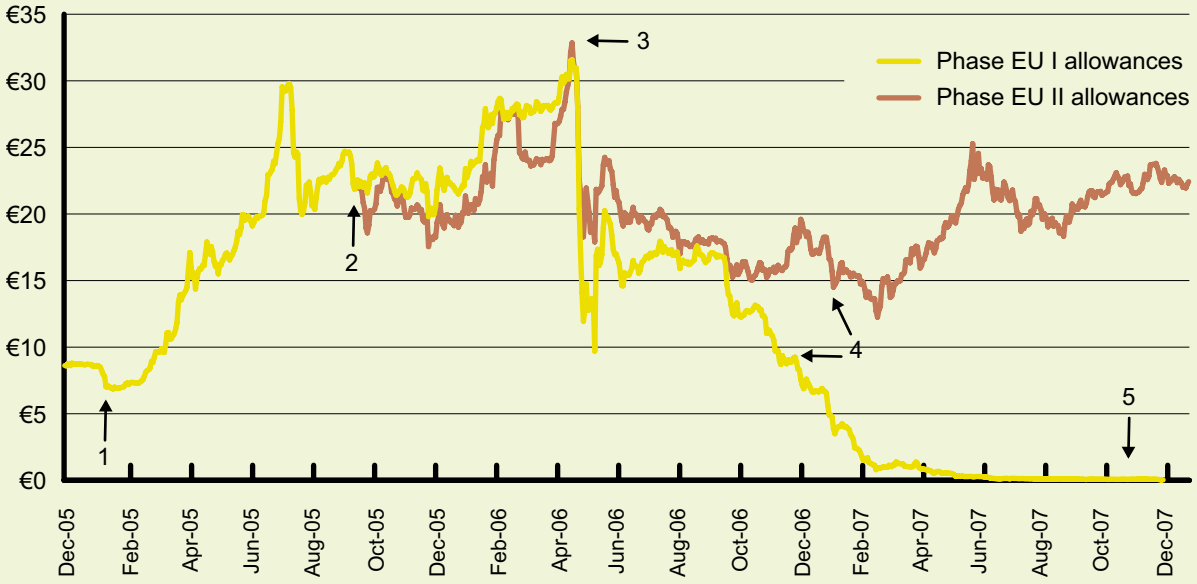
Price variation promotes market efficiency, as it ensures that the price reflects the market's most up-to-date estimates of future emissions reduction costs. Continuous price updates will, on average, lead to smaller adjustments and a smoother price path. As the carbon market deepens and derivatives markets develop for the purpose of diversifying and matching risk this will further reduce price volatility in the scheme.

Box 3.3 outlines some of the major price fluctuations in Phase I of the European Union Emissions Trading Scheme. Market commentators have noted that some of the large price fluctuations in Phase I of the scheme may have been the result of the market responses to corrections of information gaps. In addition, the European Union scheme did not allow permits from Phase I to be banked for use in future phases of the scheme. Commentators have speculated that this, combined with an overallocation of permits in Phase I, was the major reason for the fall in the carbon price in the scheme's first phase.[1] Banking and other intertemporal flexibility issues are discussed in Section 3.3.

Box 3.3
Price path of European Union allowances in Phase I of the European Union Emissions Trading Scheme

Phase I of the European Union Emissions Trading Scheme (2005–2007) was a trial period to allow firms and governments to gain experience in emissions trading. Figure 3.1 illustrates the price path in Phase I, based on a recent analysis by the Pew Center on Global Climate Change.[2]

Figure 3.1 European Union Emissions Trading Scheme Phase I price development



Source: Point Carbon website

Notes[3]

1 January 2005: Commencement of Phase I of the European Union Emissions Trading Scheme. Allowances to emitters were overallocated in Phase I due to a lack of accurate data in advance of the scheme.

2 Phase II allowances introduced and commenced trading.

3 Release of 2005 verified emissions data by several member states led to a market realisation of the overallocation and a steep decline in allowance prices.

4 The prices of Phase I and Phase II allowances diverged because there were no provisions for banking Phase I allowances for use in Phase II.

5 The price of Phase I allowances trended towards zero as allowances approached their expiry date. Phase I units could not be banked for use beyond 31 December 2007 (the end of Phase I).

3.3 The nature of a carbon pollution permit

This section addresses the characteristics of carbon pollution permits issued under the scheme (which will be referred to in the legislation as Australian emissions units).

The Government's preferred approach (outlined in Chapter 6) is that the domestic permit for the scheme be separate from Australian international (Kyoto Protocol) units. For administrative simplicity, the scheme regulator would issue only one type of permit. However, other types of units, in particular some Kyoto units, could be used to meet compliance requirements.

3.3.1 What is a carbon pollution permit?

The carbon pollution permit would be the basic unit of compliance and trade in the scheme. The legal characteristics of the permit therefore have implications for the operation of the carbon market.

There are two basic regulatory design options for the rights associated with carbon pollution permits:

- to design a permit or unit that is defined in a way that provides a high level of legal and financial certainty (option 1)
- to design a permit or unit as a limited compliance instrument or licence that could be readily extinguished by the Government without providing compensation (option 2).

Governments may wish to reduce the number of permits available in the market in order to adjust emissions caps below planned levels. Under option 1, it is proposed that the legislation implementing the scheme would not provide any power to extinguish permits without compensation. This option would reduce the risks associated with permits and hence promote market confidence and development of the carbon market.

Option 2 may make it easier for the Government to reduce the emissions cap; for example, in response to new scientific evidence on climate change. However, this approach has a number of disadvantages. Most importantly, it would reduce the demand for permits with 'vintages' beyond the current year because of the risk that those permits could be cancelled without compensation. This would hamper the emergence of a forward price for permits, reducing the carbon price information available to firms making decisions about how to manage their emissions, and to investors in low-carbon technologies. Also, option 2 could reduce the perceptions of a credible Government commitment to the scheme's long-term operation. If option 2 were adopted, then some other preferred positions might need to be revisited.

The Government's preferred position is option 1, as this would promote the development of an efficient and robust carbon market. The Government would still be able to maintain a desirable level of flexibility over cap-setting, as discussed in more detail in Chapter 4.

3.3.2 Characteristics of a carbon pollution permit

The Government's preferred position is that carbon pollution permits would be defined in the legislation as personal property to promote the development of an efficient carbon market.

To give effect to this approach, the Carbon Pollution Reduction Scheme legislation could specify the following features of carbon pollution permits:

- There would not be power to extinguish permits without compensation, unless there had been misrepresentation or fraud by the holder against the Australian Government or the regulator in the creation or issue of the permits.
- Each permit would represent one tonne of CO_2-e (carbon dioxide equivalent) of greenhouse gas emissions and could be surrendered only once.
- Permits would be transferable by assignment (for example, purchase) and according to the ordinary rules relating to the transfer of personal property (for example, on death or winding up of the holder) with registration requirements set out in the emissions trading legislation.
- Permits would be represented by an electronic entry in the national registry, rather than by a paper certificate.
- Permit holders would only be entitled to surrender permits that they hold on the national registry, and legal ownership would be transferred only by entry in the registry.
- Each permit would have a unique identification number and would be marked with the first year in which it could legally be surrendered (its 'vintage'), apart from limited capacity to borrow.

In addition, the legislation would not prohibit commercial transactions such as the creation of equitable interests in permits or taking security over permits.

It is also proposed that permits not have an expiry date. This would allow permits created in any given year to be used in future years—that is, permits would be able to be banked. Banking is discussed in more detail in Section 3.4.

3.1 Preferred position

A carbon pollution permit (which will be referred to in legislation as an Australian emissions unit) would be an entitlement composed of various 'rights' contained in the carbon pollution reduction legislation. The main rights would be the right to surrender the permit and to transfer it.

The scheme regulator would issue only one type of domestic permit, called an Australian emissions unit (referred to in this green paper as a carbon pollution permit).

The carbon pollution permits would be personal property.

Each permit could be surrendered to discharge scheme obligations relating to the emission of one tonne of carbon dioxide equivalent of greenhouse gas.

Each permit could be surrendered under the scheme only once.

There would not be power to extinguish permits without compensation, unless there had been misrepresentation or fraud by the holder against the Australian Government or the scheme regulator in the creation or issue of the permits.

Permits would be transferable.

Permit holders would only be entitled to surrender permits that they hold on the national registry. Legal title would be transferred only by entry in the registry.

The creation of equitable interests in permits would be permitted, as would taking security over them.

Each permit would have a unique identification number and be marked with the first year in which it could validly be surrendered (its 'vintage'). It would not have an expiry date.

The permit would be uncertificated; that is, it would be represented by an electronic entry in the registry rather than by a paper certificate.

3.3.3 Holding a carbon pollution permit

The Government will need to determine whether there should be restrictions on the categories of legal entities that are able to hold carbon pollution permits. For example, the right to hold permits could be restricted to liable entities and those in receipt of free permit allocations or to Australian legal entities.

One option is that the right to own carbon pollution permits, or to participate in the first auction, could be restricted to liable entities and those in receipt of free permit allocations. This option has been proposed as a means of limiting demand, and hence the price of permits. However, such restrictions would limit the development of a deep and liquid market, which would provide a more accurate carbon price. It would also be difficult to enforce, as liable entities could purchase permits on behalf of others.

The second option is to limit ownership of permits to Australian legal entities and persons. This would prevent foreign control of Australian permits and could limit

manipulation by foreign entities of the carbon price in Australia's scheme. Any restrictions would need to be consistent with Australia's international trade obligations. On the other hand, restricting foreign ownership would not prevent market misconduct or manipulation, and ownership restrictions would be difficult to enforce. More importantly, this approach could reduce the liquidity and hence the efficiency of the carbon market.

3.2 Preferred position

A permit could be held and traded by any legal or natural person (subject to verification of identity and measures to prevent criminal activity).

There would be no restriction on foreign ownership of permits, apart from any that might apply under a law other than the scheme legislation.

3.3.4 Should the Australian permits be financial products?

Services provided in relation to permits would be similar to those for financial products such as shares and debentures. Those services include the provision of trading advice, brokerage services, and trading platform and support services.

Permits, like other financial products, could also be the subject of market misconduct, including market manipulation and insider trading.

To ensure the ongoing credibility of the Carbon Pollution Reduction Scheme, the Government will need to consider the regulation of services and other conduct relating to permits. There are two options for achieving this:

- create a new regulatory regime
- use the existing regulatory infrastructure provided in Chapter 7 of the *Corporations Act 2001*, which addresses the regulation of formal financial markets, market misconduct and financial advice.

A new regulatory regime could be more easily tailored to the distinctive features of the Carbon Pollution Reduction Scheme and permits, but would require additional legislation and resources to implement and enforce.

On the other hand, adapting the existing regulatory system would be more likely to achieve consistency with the regulation of similar financial services and avoid unfair competition, which might arise from differences in regulation. Drawing on existing regulation would also reduce administrative costs for both the Government and market participants.

3.3 Preferred position

The permit would be a financial product for the purposes of the *Corporations Act 2001*, but some adjustment to that regime may be required to fit the characteristics of permits.

3.4 Intertemporal flexibility

Intertemporal flexibility refers to the extent to which entities can shift the timing of their emissions and abatement activities to reduce their costs. Three elements could increase the level of intertemporal flexibility:

- Banking—that is, allowing permits from the current year cap to be set aside for use in future years. This would reduce allowable emissions in the current year while increasing future year emissions.
- Borrowing—that is, allowing permits from future year caps to be brought forward for surrender in the current year. This would reduce allowable emissions in future years while increasing current year emissions.
- Extending surrender periods—that is, requiring liable entities to surrender permits for emissions only every two or more years, thereby allowing them to budget over the period.

The scheme could allow no, some or maximum intertemporal flexibility.

In a scheme with no intertemporal flexibility, permits would be issued each year up to the level of the annual cap and there would be no banking or borrowing. Annual emissions limits would be binding and inflexible in the absence of international linking. This could be described as a 'quarantined cap' system.

In a scheme with maximum intertemporal flexibility, the sum of annual allowable permits over, for example, 20 years would be issued into the market, and banking and borrowing would be unlimited. This is referred to as a 'carbon budget' approach. Under this approach, aggregate emissions could not exceed the total carbon budget for the defined period, but within that overall constraint annual emissions limits would be non-binding.

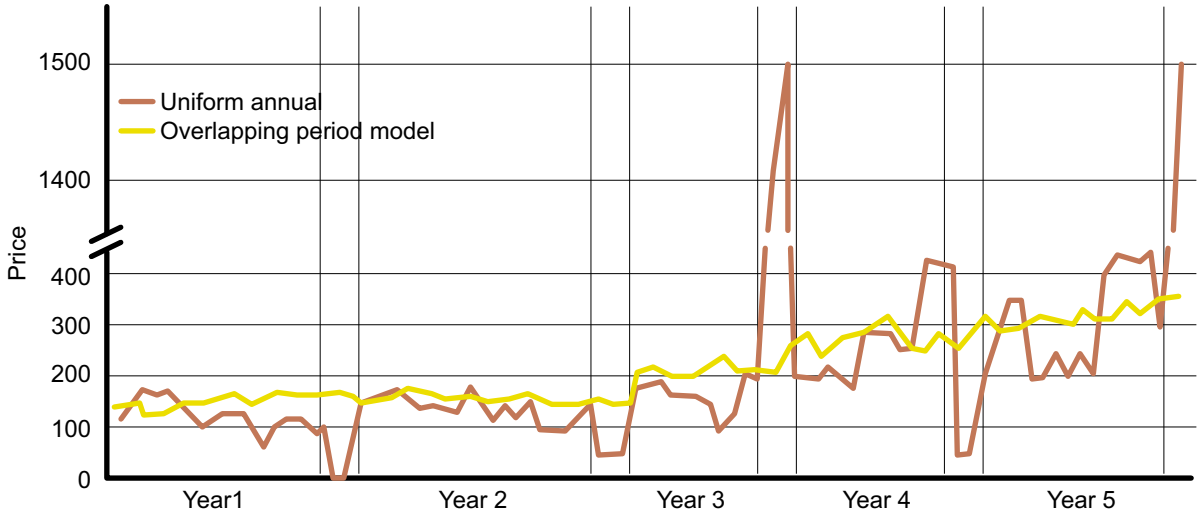
In between these extremes are systems that set annual caps but then allow some intertemporal flexibility between them. If unlimited banking and borrowing were allowed or the surrender period were extended for many years, the scheme would resemble the carbon budget approach. If banking and borrowing were not allowed and the surrender period was only one year, the scheme would resemble a quarantined cap system.

In general, inter-temporal flexibility will improve allocative efficiency by allowing abatement to occur at the time that imposes the lowest relative cost on the economy. It would also have the effect of smoothing prices over time relative to not having inter-temporal flexibility. However, even with inter-temporal flexibility the carbon price could still be volatile. Figure 3.2 illustrates an experimental analysis of the smoothing impact on the price of permits in a system with short term banking and borrowing.

However, intertemporal flexibility (most particularly borrowing) must be carefully balanced against the need to ensure the ongoing credibility of the scheme. For example, as discussed below, excessive borrowing could lead to speculation that the Government will be forced to issue additional permits in subsequent years. To maintain credibility, the Government must maintain some control over the trend and time-path of emissions.

This section considers the three intertemporal flexibility mechanisms: banking, borrowing and extended surrender periods.

Figure 3.2 Price volatility in a system with short term banking and borrowing



This figure compares the behaviour of two different types of annual pollution permits. The brown line illustrates the price path of a uniform annual instrument; that is, a permit that is valid from January to 31 December. The yellow line represents a pair of overlapping period instruments, one which is valid from January to 31 December and another which is valid from July to 30 June. In the overlapping instrument case, if there is a permit shortage due to unexpected events, firms can bank or borrow (from the adjacent period), which smoothes the price path. In the single instrument case, the inability to bank or borrow results in large price swings and a loss of economic efficiency.

Source: CR Plott, 'Presentation to Workshop', Canberra, March 2008

3.4.1 Banking

Banking allows permits to be saved for use in future years. With unlimited banking, permits would not have an expiry date—once issued, they could be used for compliance at any future time. Box 3.4 outlines banking arrangements in international and other Australian schemes.

There are three broad banking options:

- allowing unlimited banking
- not allowing banking in the early stages of the scheme
- not allowing banking.

Box 3.4
International and other Australian scheme banking proposals

The National Emissions Trading Taskforce (NETT),[4] the New Zealand emissions trading scheme,[5] and the Draft Report of the Garnaut Climate Change Review[6] recommend unlimited banking. However, the Garnaut Review noted that in the event that a transitional price cap was used permits should not be allowed to be banked between the transition period and the subsequent period. Similarly, the Task Group on Emissions Trading (TGET)[7] suggested that some limitations on banking might be needed in the early years of the scheme while a transitional price cap was in place.

The European Union Emissions Trading Scheme allowed banking between years, but not between Phase I and Phase II.[8] However, banking will be allowed between Phase II and Phase III.[9]

As with all measures that improve intertemporal flexibility, allowing banking is likely to improve the economic efficiency of the scheme. Banking allows participants to set aside permits for later 'high-demand' periods. This advantage is likely to be significant—the total resource costs of meeting a long-term emissions constraint are likely to be lower with unlimited banking than without.

Banking provides greater flexibility both for market participants and, to some extent, for the Government. A more flexible market reduces the pressure on the Government to predict the economy's demand for permits accurately from one year to the next.

Banking provisions will reduce scheme implementation risks. First, banking in general is likely to lead to an overall price path that is smoother than non-banking alternative. Limiting banking in phases can lead to cyclical pricing behaviour, with prices falling to zero at the end of each phase, as occurred at the end of Phase I of the European Union Emissions Trading Scheme.[10]

Second, if banking is not allowed, permits have a 'use it or lose it' property. Liable entities will be less likely to take early action to explore abatement potential if previously obtained permits that become surplus cannot be banked for future use. The absence of banking could therefore slow the pace of adjustment to the emissions constraints.

On the other hand, banking may result in higher initial prices for permits. Setting permits aside for future use reduces current supply (increasing the current price), but increases future supply (decreasing the future price). While this smoothes the price in the long term, the initial price rise makes it more difficult to engineer an 'easy' start to the scheme by having relatively low prices.

For this reason, some stakeholders have suggested that banking be disallowed initially while the economy is adjusting to the carbon constraint. However, there are a number of arguments against this:

- Any step change in prices would only be deferred to the period in which banking is allowed.

- Prices in subsequent periods would be higher than they would have been had banking been allowed, as more expensive abatement options are pursued (which could have been avoided if less expensive shorter term abatement had been banked).
- Disallowing banking between phases could lead to the collapse of the price of permits at the end of the non-banking phase and then a large price step up in the next phase, as occurred in the European Union Emissions Trading Scheme (see Box 3.4). This cyclical pricing behaviour could lead to less efficient market outcomes (see Section 3.1).

There is a small risk that banking could lead to inconsistencies with Australia's international obligations. Suppose, for example, that Australia were obliged to meet a certain emissions target in the years 2020 to 2025. In that period, scheme participants might draw on a stock of banked permits, causing actual emissions to rise above the target level for the period. Of course, those emissions are offset by reductions in emissions in the earlier period when banking occurred, but that might not necessarily be recognised in the new international rules. This is likely to be a low risk, since the current international arrangements include banking—Assigned Amount Units (AAUs) can be carried over into the next (as yet unspecified) commitment period. Furthermore, the Government could take account of its banking policy when negotiating internationally.

Overall, the advantages of banking (reducing overall costs, encouraging early and efficient abatement activity, providing greater flexibility to participants and to governments) outweigh the disadvantages (higher early prices than otherwise, and potential inconsistency with international obligations).

Finally, the advantages of banking are greatest if it is continuous. For these reasons, the Government's preferred position is to allow unlimited banking from scheme commencement.

3.4 Preferred position

Unlimited banking of permits would be allowed under the scheme.

3.4.2 Borrowing

Borrowing allows permits to be brought forward from future years. Borrowing can be short term (borrowing only from the subsequent year) or long term (borrowing two or more years in advance). Box 3.5 outlines international and other Australian scheme borrowing proposals.

There are five broad borrowing options:

- allow unlimited short-term and long-term borrowing
- allow unlimited short-term borrowing only
- allow limited short-term borrowing only
- allow the regulator to administer limited short-term borrowing only
- allow no short-term or long-term borrowing.

Box 3.5
International and other Australian scheme proposals for borrowing

No other Australian proposals or international schemes have recommended unlimited long-term borrowing.

In principle, the Garnaut Climate Change Review allows for some limited long-term borrowing. This would be administered by the regulator through the official 'lending' of permits from future years (but not exceeding five-years in advance), with an obligation to repay the loan at a future date. The regulator would only lend amounts it assessed would not destabilise the current or future market. In this way, the regulator would be an 'Independent Carbon Bank' that determines how many permits could be lent, and to whom, based on an assessment of creditworthiness.

The European Union Emissions Trading Scheme has a form of unlimited short-term borrowing.[11] Allowances from the following year are issued early and may be used for surrender in the current year.

The RECLAIM (Regional Clean Air Incentives Market) scheme in the United States has a form of limited short-term borrowing, such that half of the following year's units are issued for use in surrender in the current year.[12]

The NETT recommended a more limited form of short-term borrowing, such that up to 1 per cent of a party's obligation could be met by using the following year's vintage permits.[13]

The mandatory renewable energy target[14], the NSW Greenhouse Gas Reduction Scheme [15] and the Australian Capital Territory Greenhouse Gas Abatement Scheme[16] also have a form of short-term borrowing. Liable entities are allowed a limited shortfall without penalty, as long as the shortfall is made up in the following year.

The TGET recommended that there be no provision for borrowing.[17]

Long-term borrowing

The combination of unlimited banking and unlimited long-term borrowing would result in a 'carbon budget' system (described in Section 3.4). That system would allow a larger proportion of permits to be used in the short term, with corresponding reductions in emissions in later years, if that were the most cost-effective means of remaining within the overall carbon constraint over time. If the integrity of the carbon budget could be maintained, this would be the most economically efficient option.

Note that banking in the early stages of the scheme, in anticipation of tighter future caps, creates a store of banked permits that can be used in future years of high demand. That buffer would allow an economically efficient outcome without the need for borrowing.

There are three important disadvantages of unlimited long-term borrowing. First, in the domestic context, it might lead to pressure being applied to the Government to subsequently change the rules. In particular, if too many permits are used in the short term, because firms borrow from the future, the Government might be pressured into

issuing more permits in the future to avoid problems associated with a subsequent shortage of permits. Industry would have a large incentive to overuse permits (i.e. do less abatement than otherwise) in the short term in the knowledge that the Government would have little option but to accede in the longer term, or else risk damage to the economy. Second, long term borrowing arrangements are not accepted in other schemes and may pose difficulties for linking. Third, if long-term borrowing is allowed under the international climate change framework this could lead to significant and potentially detrimental delays in the global abatement effort.

Given these risks, the option of unlimited borrowing could undermine the environmental integrity of the scheme. This risk would exist even if borrowing were administered by the scheme regulator in the manner proposed by the Garnaut Climate Change Review. This is why unlimited long-term borrowing is not allowed in any existing scheme.

Short-term borrowing

Short-term borrowing would promote economic efficiency but would not involve the same risks as long-term borrowing. The primary purpose of allowing borrowing between adjacent periods is to prevent economic disruption and resulting price spikes around the surrender date. Although the frequency and timing of auctions will take into consideration the variation in demand for permits over the course of the year, the risk of price spikes around the surrender date remains, by which time actual emissions for the year and issued permits are fixed. Price spikes can arise either from 'output surges', arising from natural variation in the economy, or from speculators 'squeezing' a thin pre-surrender date market. By increasing the supply, borrowing from adjacent periods reduces the likelihood of squeezing and provides the market with additional capacity to adapt to output surges.

Unlimited short-term borrowing, like unlimited long-term borrowing, may result in credibility risks for the scheme. For this reason, some limitation on short-term borrowing may be warranted.

The first option is to limit borrowing by allowing liable entities to have a shortfall in permits. The shortfall would attract no penalty as long as it is made up in the following year. Allowing delayed compliance in this way may increase the probability of non-compliance and therefore compromise the environmental integrity of the scheme. There is also a risk that such a provision could be seen as disadvantaging those firms that meet scheme obligations without borrowing. Although this form of borrowing has not proved problematic so far in either the mandatory renewable energy target (MRET)[18] or the Australian Capital Territory Greenhouse Gas Abatement Scheme (GGAS)[19], other methods of limiting borrowing can achieve the same outcome without the associated fairness or environmental integrity problems.

Two further options are to limit borrowing by:

- allowing a certain percentage of a party's obligation to be met using the following year's vintage of permits (option 1)

or

- marking a subset of a year's vintage as available for use in the previous year's compliance period (option 2).

Each of these options delivers an equivalent level of borrowing, as required for output surges. However, option 1 is superior for alleviating squeezes (squeezes rely on a shortage of usable units). Because any of the next year's vintage could be used (in limited quantities) under this option, it would be difficult to create a squeeze in supply, as that would require the acquisition of the entire year's allocation. Option 1 is also simpler to implement, as it does not subdivide vintages into different categories.

The final option is to have the regulator administer the level of borrowing in accordance with the needs of the market, as proposed by the Garnaut Climate Change Review. In this option, the regulator would assess the creditworthiness of the borrower, who would be obliged to repay the debt by providing permits to the regulator at a later date. While the Government would be responsible for setting overall banking and borrowing policy, it would be up to the regulator to decide on the exact amount, timing and terms of the arrangement.

This arrangement is more administratively complex than the other options, which require no assessment of creditworthiness and, as long as the allowance for banking is limited, does not pose a risk to the credibility of the longer term cap. A discretionary approach would also be less transparent and provide the market with less certainty than one in which rules were legislated. A discretionary approach also requires a high degree of confidence in institutional arrangements which generally cannot be assured through legislated governance arrangements, but relies also on a track record of sound performance.

For these reasons, the Government's preferred position is to allow a certain percentage of a party's obligation to be met through the following year's vintage. Further analysis and consultation with industry will be required to determine an appropriate maximum quantitative limit on borrowing. The limit will need to be set so as to achieve market flexibility and to smooth price shocks, while at the same time avoiding damage to the credibility of the long-term cap.

Australia's national emissions have tended to vary less than five per cent between any two years. Moreover, the more volatile sectors will not initially be covered by the scheme. These factors imply that five per cent is the upper bound on the level required for natural fluctuations inside the scheme. The final determination will require careful analysis of the natural fluctuation of emissions in the covered sectors and the allowance of international units into the domestic scheme.

3.5 Preferred position

The scheme would permit a limited amount of short-term borrowing by allowing liable entities to discharge up to a certain percentage (less than 5 per cent) of their obligations by surrendering carbon pollution permits dated from the following year.

The exact percentage should be subject to further investigation and should be considered in conjunction with decisions about the level of the initial scheme caps.

3.4.3 Length of compliance period

The Government will need to decide on the length of the compliance period (the period of time over which emissions must be recorded to determine entities' obligations). At the end of the compliance period, entities that have scheme obligations will be required to surrender permits equivalent to their emissions over the compliance period. Box 3.6 discusses compliance periods in other emissions trading schemes and government compliance regimes.

There are three broad options for the length of the compliance period:

- less than one year (for example, three or six months)
- one year
- more than one year.

Box 3.6
Compliance periods in other emissions trading schemes and Government compliance regimes

Some forms of Australian Government taxation use compliance periods of less than one year for certain entities; for example, instalments of income tax and other tax under the pay as you go and the goods and services tax systems.

The NETT recommended a one-year scheme compliance period.[20] Phase I and Phase II of the European Union Emissions Trading Scheme[21] and the proposed New Zealand Emissions Trading Scheme[22] also have one-year compliance periods. The only exception is for forestry in the New Zealand scheme, which has a two-year compliance period.[23]

The United States Regional Greenhouse Gas Initiative has a compliance period of three years. The period can be extended in response to a 'safety valve' trigger event (that is, if the permit price exceeds a set amount for a certain period).[24]

At the national level, the current Kyoto commitment period is five years from 2008 to 2012 (Kyoto Protocol to the United National Framework Convention on Climate Change).

While intertemporal flexibility is important, it must be carefully assessed because of the risk it poses to the credibility of the scheme.

Compliance periods that are longer than one year will give greater flexibility in emissions between the years in the compliance period. However, longer compliance periods do not address flexibility between compliance periods. By the end of a long compliance period, a significant mismatch between the supply of, and demand for, permits in the scheme may develop.

Allowances were overallocated in Phase I of the European Union Emissions Trading Scheme, and, because there was no banking facility for those permits, their price had fallen to almost zero by the end of Phase I.[25] However, in theory, the opposite is also possible—liable entities might use up permits in the early years, leading to a shortage and an ensuing price spike at the end of the period. Furthermore, longer compliance periods might actually exacerbate intertemporal issues as pressure has longer to build up between surrender dates. The larger build up of obligations over this longer period may also increase the risk of noncompliance and undermine the scheme.

Annual compliance periods are consistent with other schemes and proposals. They are also consistent with financial-year reporting arrangements. While shorter compliance periods (less than one year) could be considered at a later time, the gains in market efficiency must be weighed carefully against the larger compliance burden both on government and liable entities. Further, entities will be allowed to surrender and retire permits at any time in order to create shorter effective compliance periods if they choose (see Chapter 5). Finally, rather than having more frequent surrender, another option is to have more frequent reporting (this issue is addressed in Chapter 5).

For reasons of international consistency and risk management, annual compliance periods are preferred over longer or shorter compliance periods.

There may be some issues associated with annual compliance and reporting periods in the context of reforestation (see Chapter 2), however, these will be considered separately in consultation with industry.

3.6 Preferred position

The scheme would have a compliance period of one year. Further consultation with industry will be needed for reporting and compliance periods for reforestation.

3.5 The price cap

3.5.1 Use of a price cap in the scheme

A price cap is a mechanism for setting the maximum cost of compliance under the scheme. In theory, a liable entity would be prepared to pay up to the cap price for a permit. If the price of permits rose beyond that point, the entity would access the price cap rather than buy a permit.

As discussed in Chapter 1, the emissions trading scheme controls the quantity of emissions through the issuance of permits and leaves the price to be determined in the carbon market. In contrast, a carbon tax would control the price of emissions and leave the market to determine the quantity.

The Government cannot control both the price and the quantity of emissions. The Government controls the supply of permits (emissions) and, to the extent that it targets a certain price, it must change the level of supply. In effect, if the Government targets a particular price, then the total quantity of emissions is no longer set by the emissions cap.

A price cap, then, is a commitment to loosen the scheme cap if the scheme cap (as currently set) leads to a market price above a certain predetermined level. This occurs because for every use of the price cap an equivalent number of permits are no longer required to be surrendered, effectively increasing the supply of units. The alternative to a price cap is to have a scheme framed only on quantity limit and with heavy penalties for non-compliance with quantitative scheme obligations.

Figures 3.3 and 3.4 provide a stylised illustration of the implications of a price cap in a single period of carbon constraint. Figure 3.3 shows a scenario in which demand for emissions is relatively low compared to the cap, so the market clearing price is below the price cap and the Government takes no action. Figure 3.4 shows a scenario in which demand for emissions is relatively high compared to the cap, so that the market clearing price is higher than the price cap. In that scenario, the Government increases the supply until the price is reduced to the price cap level.

Figure 3.3 Price cap set above market clearing price

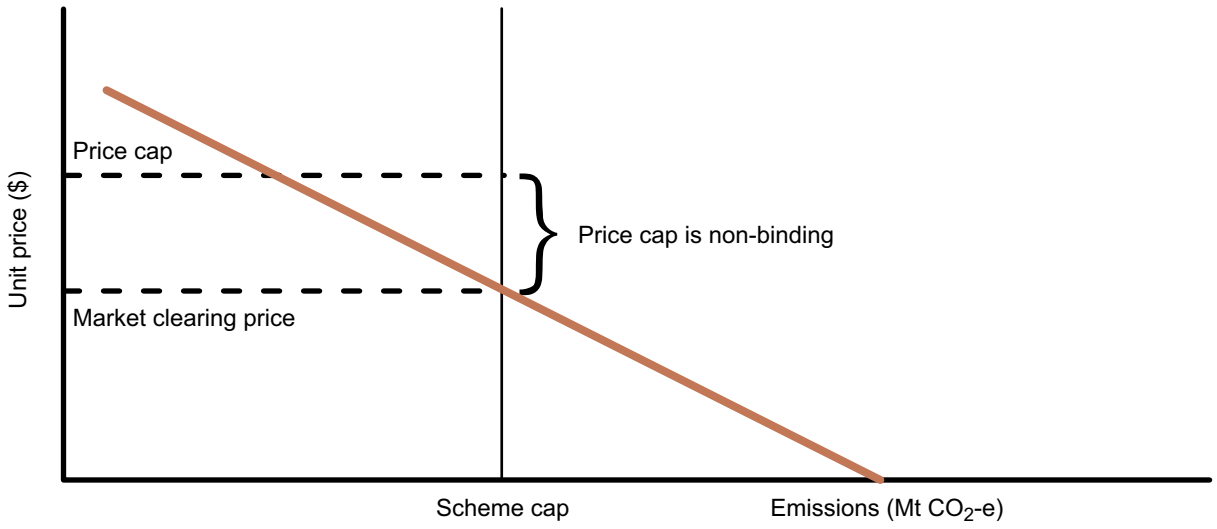
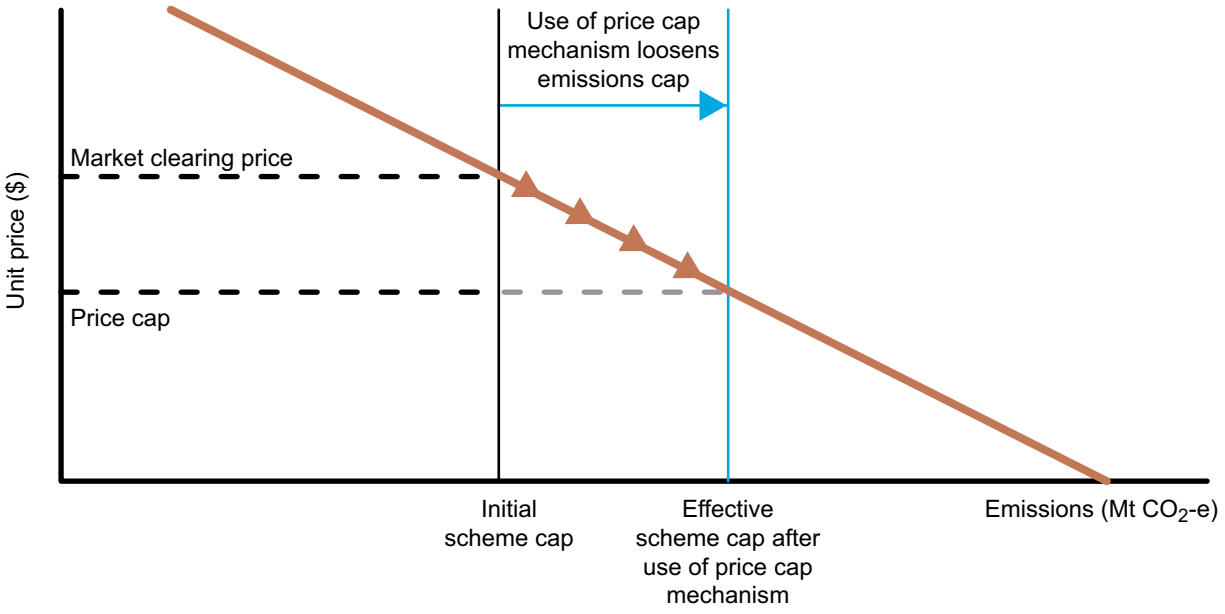


Figure 3.4 Price cap set below market clearing price



The combination of unlimited banking and a price cap also adds an intertemporal dimension. If liable entities access the price cap while banking permits for use in future periods, this will create an inventory of permits with which to increase future emissions. Because of this feature, a price cap has the potential to loosen not only the current cap but also future caps.

The Government will need to decide whether or not to have some form of price cap in the scheme. Box 3.7 outlines some price cap arrangements in Australian and international schemes and in other scheme proposals.

Box 3.7
International and other Australian scheme price cap proposals

Price caps of various forms are a common feature of emissions trading scheme proposals.

The NETT[26] and the TGET[27] recommended that an Australian scheme have a price cap, although both suggested that this arrangement be reviewed over time. The purpose of the price cap was to provide a limit on compliance costs and to promote more predictable and stable compliance costs at the commencement of the scheme.

In the proposed United States emissions trading scheme, a recent revision to the Lieberman–Warner Climate Security Act included an 'emergency off-ramp' provision that aims to prevent excessive carbon allowance price rises.

In the McKibbin–Wilcoxen model a price cap in the form of additional issuance is a permanent feature of the scheme design.[28]

The current mandatory renewable energy target, the New South Wales Greenhouse Gas Reduction Scheme[29], the Australian Capital Territory Greenhouse Gas Abatement Scheme[30] and the Queensland Gas Scheme[31] all have price caps.

The Garnaut Climate Change Review does not support the use of a price cap because of the potential implications for environmental integrity, international linking and the potential risk/cost to tax payers. The Garnaut review considers the option of a transitional price control (fixing the price) for the period 2010–2012 but expresses a preference for an unconstrained system coupled with the early acceptance of European Union Emissions Trading Scheme allowances instead.

The European Union Emissions Trading Scheme does not contain a price cap and uses a combination of a high compliance fee and a make good provision to ensure caps are met under all circumstances.[32]

The New Zealand Government does not, in principle, support the inclusion of a price cap in the New Zealand emissions trading scheme. However, New Zealand will consider a price cap if its scheme cannot be linked to an international carbon market. This could occur if there were no successor agreement to the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol) or if a suitable international market for emissions is not in place when the New Zealand emissions trading scheme commences.[33]

The main advantage of a price cap is that it reduces upside price risk, thereby capping the cost of the scheme for liable entities. It also makes explicit the Government's policy response in the event of extreme pricing outcomes in the market. In this respect, it can help promote a smoother transition for those covered by the scheme and thereby reduce implementation risk.

There are three main disadvantages of a price cap:

- Accessing the price cap would loosen the emissions cap, reducing the environmental integrity of the scheme. As noted, it might even cause a loosening of future emissions caps, further undermining the environmental integrity of the scheme. However, environmental integrity is only seriously compromised if the price cap is set so low that its use is widespread. There is no automatic environmental damage associated with a price cap: Mandatory Renewable Energy Target[34] and the New South Wales Greenhouse Gas Abatement Scheme[35] have price caps, but have extremely high levels of scheme compliance through regular surrender of compliance units or certificates.
- Use of the price cap would increase the likelihood that Australia would not meet international obligations to achieve particular emissions reductions. This transfers risks from scheme participants to taxpayers, as the Government would need to purchase international units to make up the difference. The precise cost to taxpayers will be a function of the level of use of the price cap, the cost of international units, the impact on auction revenue of relatively reduced scheme prices, and any timing differences between payment of the price cap and the purchase of international units. Because of the potential cost to taxpayers, it is important that the price cap be set at a level which is likely to result in the covered sectors meeting their share of the national effort.
- A price cap may complicate linking decisions, and might be an outright impediment to linking with some schemes (such as the European Union Emissions Trading Scheme). Other schemes will only link with the Australian scheme if they are satisfied with the integrity of the emissions constraint. A price cap undermines that integrity and could result in a loosening of both Australia's and the linking partners' constraints.

The presence of a number of other scheme features also diminishes the need for a price cap. As noted in Section 3.4, banking and borrowing represent weaker forms of price control (that is, they help to constrain the overall costs of the scheme). The proposal to allow some imported international units to be used for compliance in the Australian scheme may also suppress prices, depending on international conditions. However, since the international unit price is uncertain, so too is its value as a cap on scheme costs (Chapter 6).

While there are risks associated with a price cap, it is important to recognise that the alternative is essentially to commit to enforcing compliance *at any cost*. While the principle of allowing the market to operate freely is an important one, an emissions trading scheme is a government-operated system, and some price levels may not be credibly sustained. A price cap can be seen as a way of making explicit the Government's response to excessive prices. This provides an additional layer of market information, which aids in the smooth operation of the market.

Whether the scheme should contain a price cap mechanism depends on the balance between the implementation risks of high prices and the need to ensure the scheme's environmental integrity and ability to link internationally.

A price cap could strike this balance effectively if:

- it is set at a level that is high enough so that it is used only in exceptional circumstances and probability of use is low. This reduces the risk to the scheme's environmental integrity and the potential costs to the Government of making up any difference between national emissions and an internationally negotiated target.
- it has a time limit; for example, it could operate until 2015. Given that Australia is unlikely to want to engage in direct, bilateral linking until it has bedded down its own arrangements (and other countries are likely to wait to see how our scheme performs before they decide to link with the Australian scheme), this date should not prove a major impediment to linking.

It is considered prudent to have some form of price cap in order to avoid extreme prices, at least initially while uncertainty is highest in the scheme. To mitigate the risk of compromising the scheme's environmental integrity, the price cap should be set sufficiently high as to deter widespread use.

3.7 Preferred position

The scheme would have a price cap for the period 2010–11 to 2014–15.

The price cap would be set high enough above the expected permit price to ensure a very low probability of use. The precise level would be set taking into account all information about scheme design and the expected abatement costs in the economy.

The price cap would be reviewed at the first review point, taking into consideration banking and borrowing arrangements, limits on the surrender of international units for compliance, the maturity of the market and future international linking commitments.

3.5.2 Form of the price cap

A price cap can take a variety of forms, but the essential element is that, ultimately, a cash payment in lieu of the surrender of permits could discharge an obligation accrued under the scheme.

A price cap could take two main forms:

- access to an unlimited store of additional permits, sold by the Government at a fixed price, or
- an administrative penalty for noncompliance.

All emissions trading schemes require some form of penalty for noncompliance (see Chapter 5). If this penalty is in the form of a cash payment in lieu of surrendering permits, then it will form an effective price cap in the scheme. Other forms of compliance penalty might not be effective price caps. Box 3.8 discusses the conditions under which a compliance penalty regime can constitute an effective price cap.

Box 3.8
Penalties and make-good provisions

All emissions trading schemes require some form of penalty for noncompliance (see Chapter 5). However, not all compliance penalty regimes constitute effective price caps.

Penalties with make-good provisions

Compliance penalties usually take the form of a monetary penalty. If a make-good provision is part of the compliance regime, the penalty does not form a price cap mechanism. A make-good provision requires that, in addition to the monetary penalty, the noncompliant liable entity must surrender permits equal to its emissions in order to dispense its obligation.

For example, if a liable entity failed to comply because of the cost of permits, where a make-good provision applied, the entity would be required to pay the compliance penalty and proffer permits for surrender in a subsequent period. This would be required regardless of permit cost.

A variation of this arrangement would be for the Government to make good on behalf of noncompliant entities; for example, by buying back an equivalent number of permits in the market to make up the shortfall.

In each case, the integrity of the cap would be maintained, since a unit would have been retired for every emission that occurred within the scheme. In this way, the cap would not be loosened in the event of payment of the compliance penalty and the price of units would not be affected.

The penalties in the European Union[36] and New Zealand[37] schemes contain make-good provisions and do not perform a price cap function.

Penalties without make-good provisions

A compliance regime without a make-good provision forms an effective price cap. Entities could simply pay a monetary penalty. The level of the monetary penalty would then become the level of the price cap in the scheme.

The current mandatory renewable energy target[38], the New South Wales Greenhouse Gas Reduction Scheme[39], the Australian Capital Territory Greenhouse Gas Abatement Scheme[40] and the Queensland Gas Scheme[41] all have penalties without make-good provisions, providing effective price caps.

The two forms of price cap have the same basic effect of limiting scheme compliance costs although there are some subtle differences.

- Payment of an administrative penalty would not be tax deductible under Australian income tax law. Additional issuance, depending on its legal form, could have different tax implications at the point of surrender (see Chapter 11).
- An administrative penalty for non-compliance may encourage liable entities to pay higher prices for permits and generate higher levels of compliance within the scheme caps. Many firms place a high value on their reputation as good corporate citizens, and will want to be seen to be in compliance. Purchase of additional units at a set price would not have those reputation implications.

The Government seeks comment on the alternative forms that a price cap might take.

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4. Emissions targets and scheme caps

This chapter discusses how limits could be placed on greenhouse gas emissions through setting scheme caps, and the relationship between those caps and national emissions targets.

The annual limit on scheme emissions—the cap—is the central element of a cap and trade emissions trading scheme. This chapter discusses the issues associated with cap-setting, including its relationship with short-, medium- and long-term national emissions targets.

The chapter does not discuss the *levels* of scheme caps or medium-term targets for national emissions—the Government will provide a firm indication on interim national targets and trajectories by the end of this year, taking into account work being undertaken by the Treasury and the Garnaut Climate Change Review (see Chapter 1). The Treasury modelling is expected to be released in October 2008. Scheme caps reflecting this trajectory and other guidance will be announced in early 2010, before the scheme commences.

This chapter considers the following issues:

- Section 4.1 discusses key policy themes and trade-offs involved in emissions trajectory setting, the nature of Australia's international obligations, and the guidance that the Government proposes to provide on its medium-term national target and the short-term indicative national emissions trajectory.
- Section 4.2 explains the need to reconcile the scheme cap with the indicative national trajectory for reporting purposes.
- Section 4.3 considers options for cap-setting and determining 'gateways' (ranges), including timing and methods used overseas.
- Section 4.4 discusses options for future adjustments to the scheme cap to cater for international developments, increased sector coverage, and new industries.
- Section 4.5 sets out a proposed timeline for announcing scheme caps and the national trajectory.

4.1 Issues in trajectory setting

A principal determinant of the overall cost to the economy will be the stringency of any limits on national emissions compared with the emissions growth that would have taken place in the absence of mitigation efforts (business as usual).

The Australian Government has committed to a long-term national emissions reduction target of 60 per cent below 2000 levels by 2050. This economy-wide target will be achieved by a range of policies, but primarily through the Carbon Pollution Reduction Scheme. The environmental integrity of the scheme is dependent on this long-term target, as well as on the medium-term national target and scheme caps.

While ever the Carbon Pollution Reduction Scheme has less than 100 per cent coverage of national emissions there will be a difference between the national emissions trajectory and the scheme caps. A number of administrative issues are created by this difference.

A cap and trade scheme requires the emissions cap to be specified for some period into the future. In setting out the future path of scheme caps, there is a need to balance market certainty (to help promote an economically efficient response) against policy flexibility (to take account of scientific developments and evolving international obligations including, potentially, national targets). The scheme is the primary means by which the Government will seek to meet its international obligations. Therefore, it is important that the scheme cap is consistent with national targets.

In considering the policy for emissions trajectory setting, this chapter canvasses and evaluates a number of options based on international experience and other Australian Carbon Pollution Reduction Scheme design proposals. As with other scheme design options, these are assessed against the criteria set out in Chapter 1.

4.1.1 The medium-term target

The scheme caps must be consistent with the medium-term target announced by the Government. The Government has said that it will announce a firm indication of the medium-term emissions target by the end of this year—this may be either a single point target or a target range.

A single point could provide greater certainty to the market and facilitate investment decisions. However, a single point would potentially limit the Government's ability to respond to new information, particularly in respect of international conditions, international technology or scientific developments. A target range will strike a balance by providing guidance while still retaining the necessary flexibility to adapt to domestic and international developments. The medium-term target will also inform the Government's international negotiating position in the current UN negotiation for a post-2012 outcome, the shape of which will remain uncertain until negotiations are concluded.

In the context of the post-2012 negotiation, individual developed countries are yet to nominate precise medium-term (five to 10 year) targets. The European Union has said that its 27 members would be collectively prepared to reduce emissions unilaterally by 20 per cent below 1990 levels by 2020, and to reduce emissions by 30 per cent in the context of a post-2012 outcome where other advanced economies took comparable action.[1]

4.1 Preferred position

At the end of 2008, in the context of the white paper, the Government would announce a medium-term national target range for 2020 that provides upper and lower bounds to give investors and market participants information on directions and retains sufficient flexibility for the Government.

4.1.2 The indicative national emissions trajectory

Having set a medium-term target range, the next issue is whether and how the Government can provide guidance on the desired path of national emissions towards that target range—the national emissions trajectory.

The main advantages of providing an indication of the national emissions trajectory would be to:

- provide businesses with covered and uncovered sources of emissions with more information about the Government's intended national emissions path
- provide a national emissions envelope within which cap-setting decisions for covered emissions sources can be made.

If information on the national emissions trajectory is to be provided, the Government must decide on the form of that information.

There are two options:

- the Government could set firm national targets for every year leading up to its medium-term national targets

or

- the Government could provide an indicative national emissions trajectory.

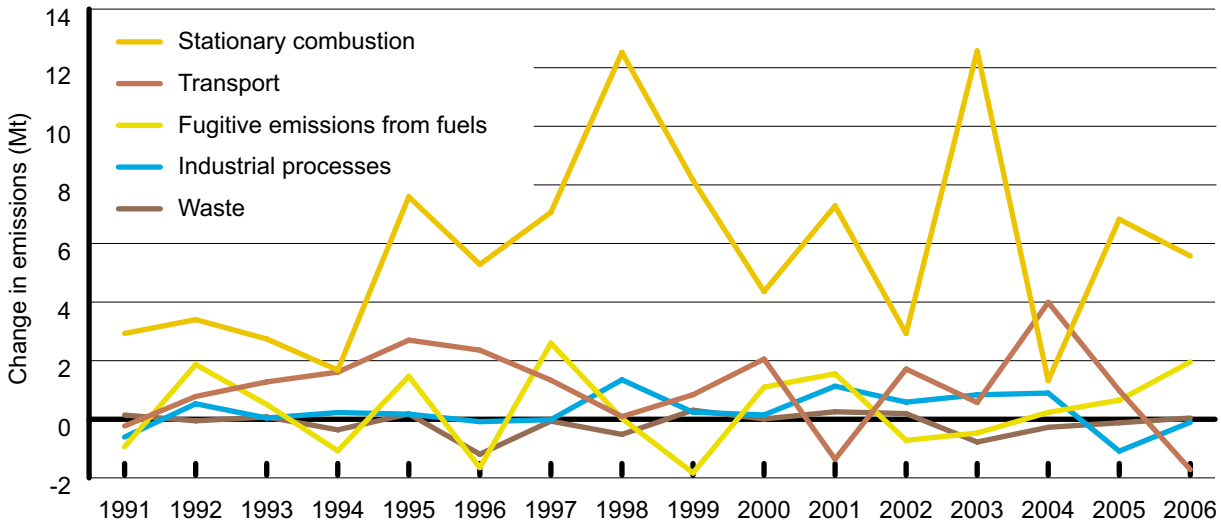
An indicative national trajectory would have the advantage that it would accommodate the emissions variability caused by banking and borrowing within the scheme, as well as natural variability of uncovered sources of emissions. Figure 4.1 provides an indication of the variability in agriculture and land-use emissions.

Box 4.1
Variability in national emissions

Under current international accounting rules, Australia's annual national emissions have tended to vary less than 5 per cent from year to year. However, for emissions sources that it is proposed would be covered by the scheme, inter-annual changes in emissions range from 0.01 to 12.6 $MtCO_2$-e (carbon dioxide equivalent) (Figure 4.1), while those for uncovered sources of emissions range from 0.05 to 24.7 Mt CO_2-e (Figure 4.2). The inter-annual variability in national emissions is driven by factors such as changes in economic activity, population, commodity prices, the characteristics of the coal, oil and gas being extracted, and natural climate variability. The agriculture[2] and land-use emissions are particularly affected by climate variability. This is clearly evident with the significant drop in emissions from these sources following the widespread drought conditions in 2001–02 and 2002–03 (Figure 4.2).

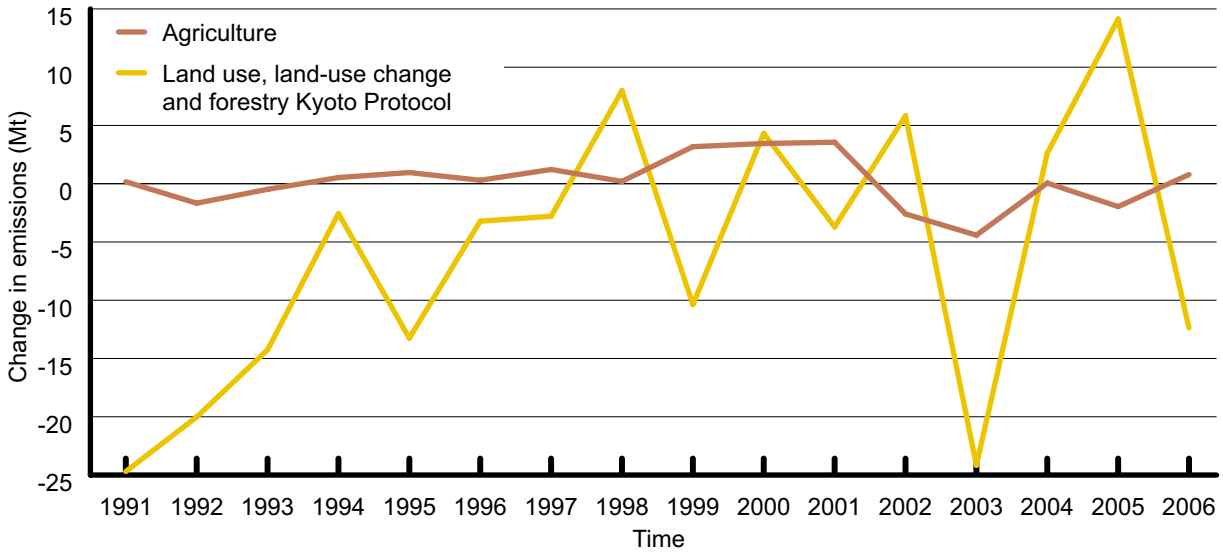
To address the inherent variability in the emissions estimates, the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol) uses a five-year commitment period (2008–12) rather than a single year (2010). The allowable level of emissions for Kyoto parties that have emissions reduction targets is referred to their 'assigned amount'. A party's assigned amount is calculated as the base year emissions (1990 emissions) × emission target relative to base year (108 per cent for Australia) × five. Total emissions during the commitment period 2008–12 must be equal to or less than the assigned amount.

Figure 4.1 Annual change (Mt CO2-e) in energy, industrial processes and waste emissions



Source: National Greenhouse Gas Inventory, Department of Climate Change

Figure 4.2 Annual change (Mt CO2-e) in agriculture and land use, land-use change and forestry emissions



Source: National Greenhouse Gas Inventory, Department of Climate Change

4.2 Preferred position

The Government would announce an indicative national emissions trajectory to provide broad guidance on the pathway towards the medium-term target range.

Length of the indicative national emissions trajectory

The Government will need to decide how many years of indicative national emissions trajectory to announce.

In a situation where Australia's international commitments are known, the indicative trajectory would naturally extend to the end of the commitment period. However, at this stage Australia's international commitments are not known. Accordingly, the Government will need to decide the minimum number of years of the indicative trajectory that it will announce.

While the national trajectory is only indicative, it will inform decisions on scheme caps. In setting out the future path of national emissions, the Government will need to balance guidance it provides to the market (to help promote an economically efficient (low-cost) response) against the policy flexibility it requires to adapt the scheme to evolving international target obligations.

In theory, the Government could provide any number of years of indicative trajectory. The New Zealand schemes currently provides indicative trajectories only where its international commitments are known to avoid pre-empting the results of international negotiations. At the other extreme, some stakeholders have called for much longer periods, for example, 40 years, which runs the risk of prejudicing Australia's international negotiating position.

Five years of indicative trajectory, to be extended by one year every year, in order to maintain a minimum of five years of guidance, would seem to strike a reasonable balance between predictability and flexibility. In practice, because the trajectory is only indicative and scheme cap guidance is provided elsewhere, the precise number of years is not critical to the smooth operation of the scheme. However, five years will ensure that indicative trajectory setting is consistent with the approach to scheme cap setting (see Section 4.3). Section 4.3 also contains a more specific discussion of market guidance in the context of scheme cap setting.

4.3 Preferred position

The Government would announce a minimum of five years of the indicative national emissions trajectory, to be extended by one year, every year as required to maintain a minimum of five years of guidance at all times after commencement of the scheme.

4.2 Accounting for scheme caps and the indicative national emissions trajectory

In contrast to the indicative nature of the national emissions trajectory, the scheme cap represents the total allowable emissions from sources covered by the scheme and hence will play a critical role in determining the price of permits. Permits are to be issued up to the level of the cap and allocated as set out in Chapter 7. In the absence of international trading or additional Australian permits, the cap sets the limit on the number of tonnes of emissions that can be emitted from covered sources. The only additional eligible emissions units would be those international units accepted in the scheme (see Chapter 6), additional Australian permits generated from reforestation and, possibly, scheme offsets (see Chapter 2).

Because the scheme will not cover all sources of emissions at commencement (see Chapter 2) the scheme cap and Australia's total national emissions will be different.

Australia's international obligations are specified in terms of national emissions. At least initially, emissions from covered sources will form only a subset of total national emissions. Therefore, there needs to be a clear relationship between the scheme cap and the indicative national emissions trajectory.

4.2.1 Notional allocation

There are two possible options for reconciling Australia's national emissions trajectory and scheme caps for reporting purposes:

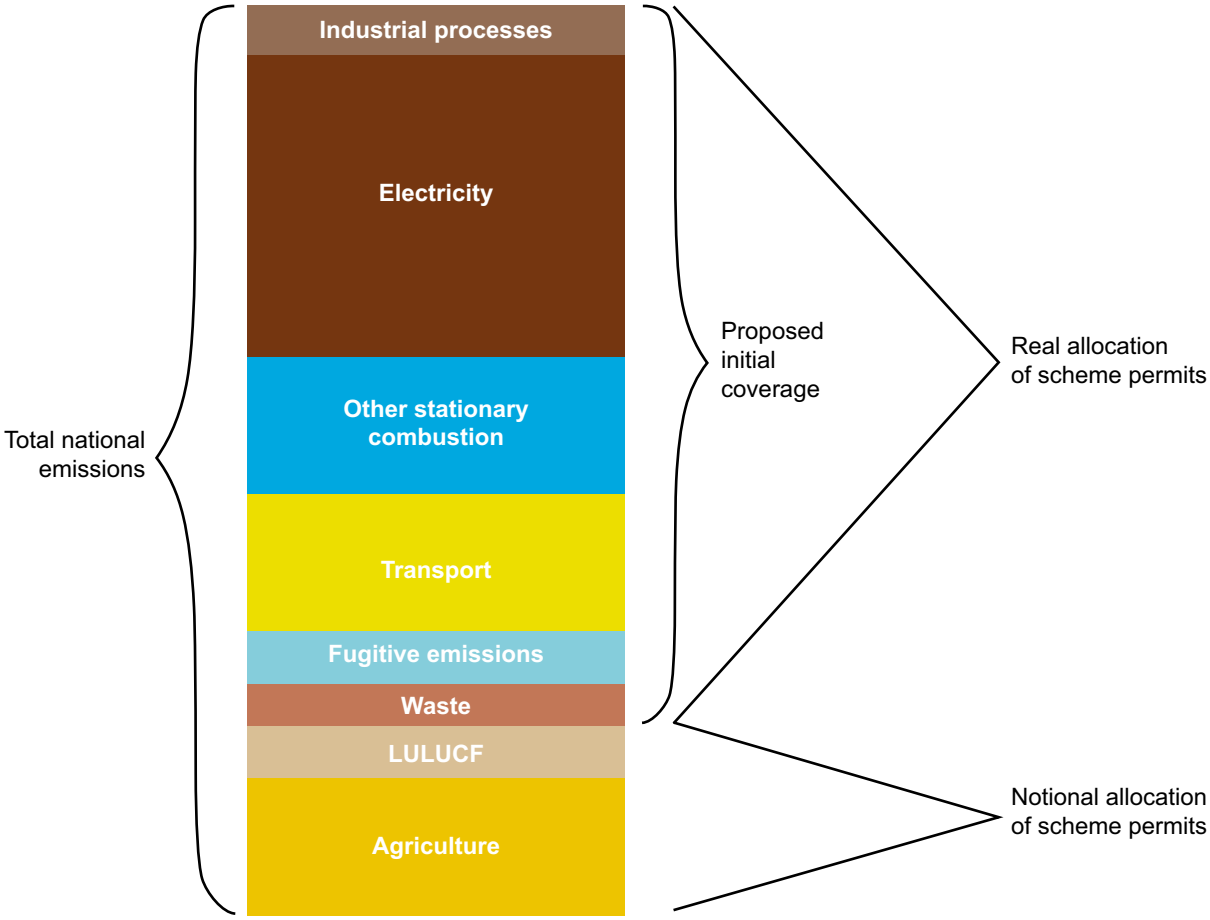
- The Government could account for emissions from covered sources separately from those not covered by the scheme. For reporting purposes, reconciliation would then be a matter of subtracting scheme emissions from national emissions.
- The Government could account for emissions from uncovered sources in the same way as it accounts for those from covered sources. Permits equal to the scheme cap are allocated by the Government and entities whose emissions are covered by the scheme obtain and surrender permits equal to their emissions. The Government could make a similar notional allocation for uncovered sources of emissions. That is, as a matter of accounting, the Government could notionally allocate and retire permits each year on behalf of uncovered sources of emissions (this approach is illustrated in Figure 4.3).

As discussed in Chapter 2, it is important that all sectors contribute towards the costs of achieving Australia's emissions reductions objectives and that they have incentives to reduce emissions from all sources. The difference between these options is, therefore, a matter of form only. In each case, all emissions must be estimated and reported as part of Australia's national greenhouse gas inventory reporting, although the emissions from uncovered sources will be more difficult to estimate than will those from covered sources.

Once scheme coverage has been determined, the issue is whether covered and uncovered sources of emissions should be accounted for in the same way. Under the notional allocation approach, the additional book entries may increase transparency. A notional allocation ensures that the relationship between covered emissions and the national emissions trajectory is consistent and transparent over time. As the scheme coverage expands to incorporate further sources of emissions, scheme caps will expand, ultimately aligning with national targets as scheme coverage approaches 100 per cent of national emissions. As scheme coverage increases, the notional unit allocation would shrink and the real allocation would increase.

On balance, a notional allocation would seem to promote some additional transparency in Australia's national emissions reporting.

Figure 4.3 Real and notional permit allocation



4.4 Preferred position

The difference between the scheme cap and the national target would be explicitly and transparently reconciled through notional allocation (and retirement) of permits for sources of emissions not covered by the scheme.

4.3 Guidance over scheme caps

The Government will need to make a decision as to how much guidance to provide regarding future scheme caps.

4.3.1 Scheme caps

Setting scheme caps

The Government will need to make a decision as to how many years of scheme caps it will announce in advance.

In setting out the future path of scheme caps, the Government will need to balance market certainty (to help promote an economically efficient (low cost) response) against policy flexibility (to achieve consistency with evolving international obligations and objectives). Box 4.2 discusses the duration of caps in other schemes and Australian proposals.

Where international commitments are known, scheme caps consistent with those commitments could be extended to align with the commitment period. However, the Government must choose the minimum duration of scheme caps that it will announce in the absence of clear direction in relation to international commitments.

While scheme caps of any duration could be contemplated, three broad options have been proposed in Australia and elsewhere:

- The Government could provide a longer period of certainty (10 years or more) over scheme caps. This would be consistent with the recommendations of TGET[11] and NETT.[12] Even longer scheme caps have been proposed by several industry stakeholders.
- The Government could provide a 'medium' number of years of certainty—five years (2010–11 to 2014–15)—as proposed by the Garnaut Climate Change Review.[13]
- The Government could provide the minimum number of years required to align with the international commitment period. For example, the Government could provide just two years (2010–11 to 2011–12) in order to align with the current Kyoto commitment period. The New Zealand[14] and European Union Emissions Trading Scheme[15] have aligned scheme caps with their international obligations.

Box 4.2
Duration of caps in other schemes and Australian proposals

The first commitment period under the Kyoto Protocol allowed for a five-year commitment period (2008–12). If the second commitment period were of the same five-year duration, it would run from 2013 to 2017. The United Nations' negotiation for a post-2012 outcome is unlikely to address the length of the second commitment period before late 2009. In part the negotiated length of a second commitment period will depend on the emerging shape of the overall post-2012 package. The higher the level of ambition for developed and developing country commitments, the greater the desirability of locking in commitments over a longer time period.

The European Union Emissions Trading Scheme originally announced that scheme caps in Phase I would be set for three years, and for five years in Phase II.[3] It is proposed that in Phase III of the scheme, scheme caps will be set for eight years (2013 to 2020).[4]

A survey of European Union Emissions Trading Scheme stakeholders and participants, commissioned by the European Commission as part of its review of the scheme, indicated that uncertainty created by the short initial phase for scheme caps was the biggest obstacle to market liquidity.[5] A large majority of the companies and industry associations surveyed indicated that they would prefer phases of 10 years or more, with national allocation plans being announced two or three years in advance of units being allocated.

At the start of the New Zealand emissions trading scheme, scheme caps will be known only for the years to the end of the Kyoto commitment period (2012). It is intended that domestic emissions trading scheme caps after 2012 will coincide with the period set for future international emissions commitments.[6]

In Australia, both the National Emissions Trading Taskforce (NETT)[7] and the Task Group on Emissions Trading (TGET)[8] recommended that firm caps be set for a period of 10 years, followed by a 10-year range of caps ('gateways').

The Garnaut Climate Change Review has recommended that firm caps be set for five years, and that information on possible longer-term trajectories and a long-term target, which would be specified in advance, is provided.[9] Different trajectories would apply, depending on Australia's international commitments. The Government would announce when the specified conditions for switching tracks had been met five years in advance of the intended switch.[10]

Ten years of certainty over scheme caps (or even longer as advocated by some stakeholders) would provide a greater information set with which to inform emissions unit prices. This would help to guide investment proposals with longer payback periods. However, Australia's current international commitments have only been agreed to 2011–12. By extending so far into the future, a 10-year cap period risks significant misalignment between caps and further obligations that Australia might choose to negotiate and accept. Fixing scheme caps for that length of time might unduly constrain Australia's negotiating position and might result in inequitable burden-sharing across the economy.

Minimum certainty over scheme caps would align with the current Kyoto commitment period, ensuring consistency between the scheme and Australia's international obligations. However, that position was adopted in New Zealand because the New Zealand scheme will be completely open to international trade and its domestic carbon prices will be set internationally, which means that domestic caps provide no new information about likely domestic carbon prices.[16]

If the Australian scheme were to be completely open to the international market the domestic permit price would converge on the international price and would be less influenced by scheme design features. However, the Government proposes a more graduated approach to international linking (see Chapter 6). Therefore, Australia's permit price will be more sensitive to cap-setting decisions, and guidance over caps will provide price-relevant information to investors. If Australia is to take the more gradual approach to linking, then setting firm caps only until 2011–12 would seem to be too short a period for meaningful information to be available for investors.

On balance, five years of scheme caps at scheme commencement—consistent with the recommendations of the Garnaut Climate Change Review[17]—appears to strike a reasonable balance between the need for investment certainty and the need to maintain flexibility in relation to future international negotiations and commitments. In the event that Australia's international commitment period extends beyond five years, scheme caps would also be extended beyond five years to ensure consistency.

4.5 Preferred position

Scheme caps would be set and announced for a minimum period of five years in advance at any one time.

In the event that Australia's international commitment period extends beyond five years, scheme caps would be extended to the end of the commitment period.

Extending scheme caps

Annual caps will need to be regularly extended. Longer intervals between cap extensions will lead to shorter minimum periods of certainty over caps. As noted above, it is proposed that caps be set for five years in advance. The caps could be extended at the end of the five-year period, say for another five years. However, as each year passed, businesses would face a shorter horizon of cap certainty until the extension was made—this option would provide between zero and five years of certainty over caps at any time. Conversely, if caps were to be extended by one year, every year, that would provide four to five years of certainty over caps at any time.

The NETT[18] and the Garnaut Climate Change Review[19] have proposed that firm caps be extended by one year, every year, while the TGET[20] recommended that caps be extended by five years, every five years.

A short interval (such as one year) has a number of advantages. A short interval would increase flexibility for the Government, which could make small extensions to the cap each year in response to developments in the economy, environmental science or international objectives and commitments. A short interval would help maintain a minimum period of certainty over caps at all times. It would also provide a more regular flow of information to the market about future emissions constraints, which could help promote a more continuous pricing response, rather than sharp, irregular adjustments.

The disadvantage of extending scheme caps by one year, every year, is that the administrative costs of gathering advice, consulting stakeholders and effecting the change through the appropriate legislative mechanism would be higher than if scheme caps were extended less regularly.

On balance, the Government considers that the benefits of maintaining the maximum period of certainty and providing more regular information to the market are likely to outweigh the administrative costs associated with a shorter interval for extending caps.

4.6 Preferred position

Scheme caps would be extended by one year, each year, as required to maintain a minimum five-year certainty period. Should the international commitment period (and therefore scheme caps) already extend beyond five years, an annual extension would become optional.

4.3.2 Gateways

A further option that the Government can consider is whether it should employ 'gateways'; that is, ranges within which scheme caps could be extended over time.

The Garnaut Climate Change Review, the TGET and the NETT have all proposed that some form of gateways be used. Similarly, caps for Phase III of the European Union Emissions Trading Scheme are currently expressed as a gateway.[21] Stakeholders have generally expressed support for using gateways. In all of these proposals or arrangements, gateways take the form of a government commitment to the range of values that future caps may take beyond the period for which caps have already been set.

Under a gateway approach, firm caps for a number of years would provide certainty to investors. Gateways could then be announced for set intervals beyond the initial period of scheme caps as a guide to the Government's longer term cap-setting intentions. Firm caps would be extended by one year each year within the bounds set by the gateways. Investors would have certainty that the path of the scheme cap will be consistent with the gateway. The gateway itself could also be extended at intervals, ensuring a continuous period of certainty, followed by guidance, over the short and longer term.[22]

The principal advantage of using a gateway is that it allows the Government to provide more information to the market about future caps, but in a way that maintains a degree of flexibility. Providing information about constraints on future cap-setting would assist in planning new investments.

A second potential advantage is that a gateway could promote Australia's international climate change objectives by signalling Australia's readiness to commit to stricter domestic caps in the event that other countries make similar commitments. For example, the European Union has signalled that its scheme cap will be tighter if other developed countries take on significant commitments.

The only major potential disadvantage associated with the use of gateways is that they might unduly constrain the Government's flexibility in the event that it wished to set a cap that was outside the gateway range. However, that risk should be taken into account and balanced against the benefits of providing greater investor certainty and more accurate international signalling.

On balance, the Government considers that a gateway in some form is desirable, as it balances the need for guidance against the flexibility to adapt to changing international conditions.

4.7 Preferred position

By using gateways, the Government would provide guidance over future scheme caps beyond the period of fixed scheme caps.

Form of the gateway

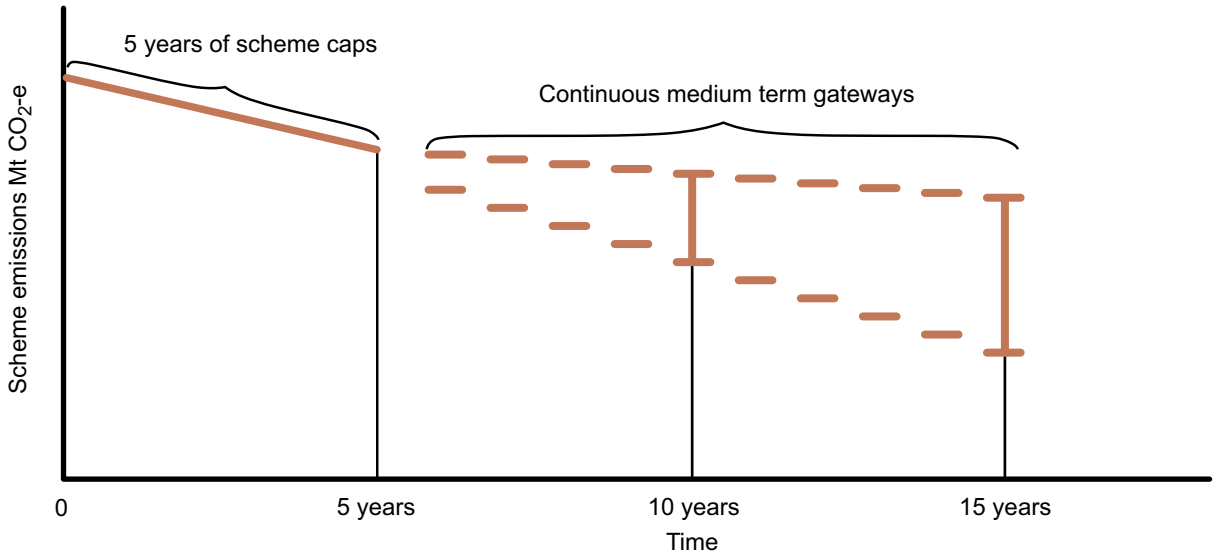
Three possible forms of gateways could be used to provide guidance to the market under the scheme:

- *Continuous gateways* would provide a range of values for scheme caps for every individual year beyond the period of certainty. This form was proposed by the NETT.[23]
- *Periodic gateways* would provide ranges of values for scheme caps but only in certain years set at regular intervals. For example, the TGET proposed that periodic gateways be set in every fifth year at the five- and 10-year marks beyond the period of certain scheme caps.[24]
- *Track gateways* take the form of a number of potential tracks of future scheme caps. Government would announce the track that it was currently on and pre-specify the circumstances under which it would shift tracks. This approach was proposed by the Garnaut Climate Change Review.[25]

The three approaches are illustrated in Figures 4.4 A, B and C.

Figure 4.4 Forms of gateway

A. Continuous gateways



B. Periodic gateways

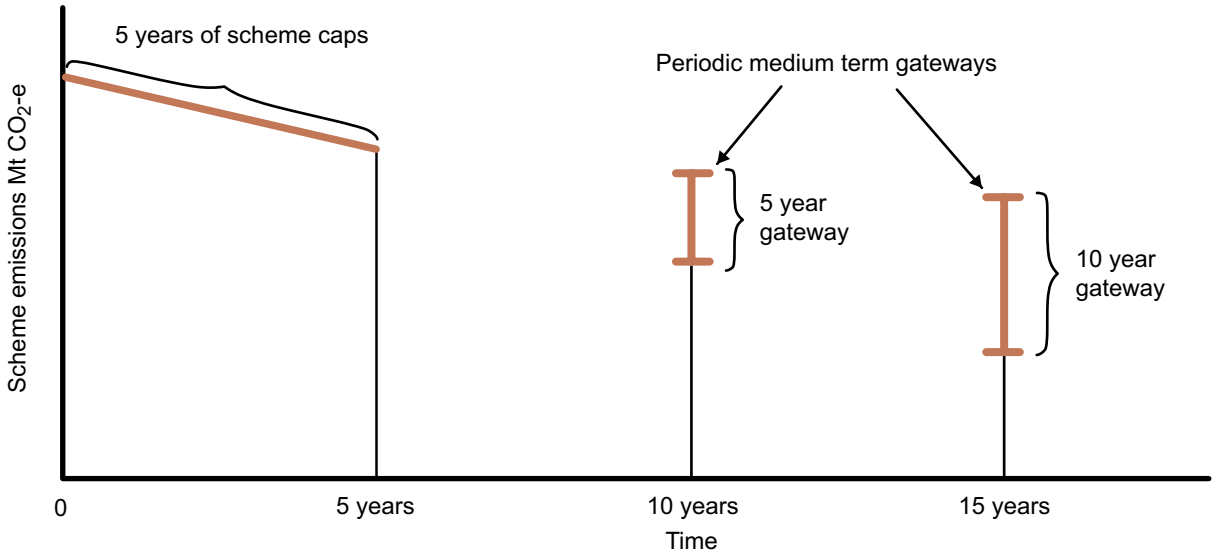
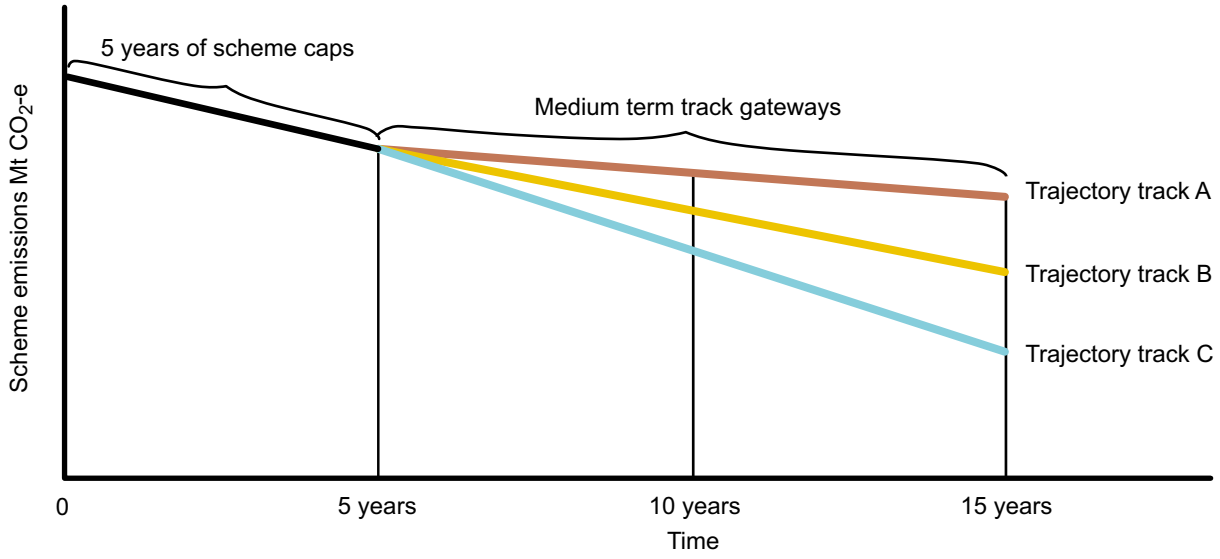


Figure 4.4 Forms of gateway (Continued)

C. Track gateways



The range approaches (periodic and continuous gateways) have greater flexibility than the track gateway approach. A potential difficulty with a track gateway is that uncertainty about the future international environment makes it difficult to pre-specify hard tracks and mechanistic switching rules. The international situation is likely to contain ambiguities that will make the track-switching decision difficult and potentially arbitrary, which would create uncertainty about the national emissions trajectory. Further, to the extent that tracks are widely spaced, a switch may cause a larger disruption to the scheme compared with the more incremental approach possible in other proposals. For these reasons, a range approach is considered more appropriate for the Australian scheme.

The difference between the two range approaches is small. Short periodic gateways (such as five years) and continuous gateways may provide approximately the same level of guidance. This is because, in practice, the Government would take the five-year gateway into consideration when setting scheme caps in the interval between the end of the certainty period and that gateway. This means that the caps in the interval years are unlikely to deviate much from the values they would have had if gateways were specified for each and every year. At the same time, continuous gateways provide an additional discipline and can be announced with very little loss of flexibility. On balance, continuous gateways are preferred.

4.8 Preferred position

The Government would provide guidance over future scheme caps beyond the initial certainty period through the use of a gateway in each of the following years, to the end of the gateway period.

Length of the gateway

The Government will need to decide the length of the period of gateways beyond the period of certain scheme caps. The scheme could have:

- a short period of gateways, such as five years
- an intermediate period of gateways, such as 10 years (as recommended by the TGET and the NETT)
- a long period of gateways, such as 15 years or more (as is implicit in the Garnaut Climate Change Review proposal).

Gateways allow the Government to provide information to the market about likely future caps, while still maintaining a degree of flexibility. The further into the future the gateways extend, the less relevant the information provided will become. In addition, the width of the gateway will tend to expand the further into the future it runs, reflecting rising uncertainty about cap-setting decisions. As the gateway widens to ensure adequate future flexibility, it becomes less useful to the market.

There may be little practical benefit in extending gateways further than 10 years beyond the period of cap certainty (a total of 15 years into the future). Beyond that period, the gateway is likely to have become very wide to accommodate the full range of future circumstances that might influence cap-setting, and the price impacts of cap changes are likely to have been heavily discounted. Gateways of that length may add little practical guidance beyond that already provided by the 2050 national target, and would extend beyond the horizons of most planning decisions in any event.

At the same time, five years (10 years into the future) does not provide a very clear picture of the Government's strategic approach to cap-setting. For this reason, the TGET and the NETT both proposed 10 years of gateways beyond the scheme cap certainty period (which was 10 years in both cases).

Ten years of gateways would seem to strike the right balance between the inherent uncertainties about future international obligations and covered sector emissions early in the scheme and the market's need for clarity on scheme parameters for as long as possible.

4.9 Preferred position

The initial length of the gateway would be 10 years beyond the minimum five years of scheme caps.

Extending gateways

To continue to provide guidance to investors, gateways will also need to be extended at certain intervals.

The two broad options for extending gateways are to extend them by one year every year or to extend them by five years every five years (as proposed by the NETT and the TGET). The Garnaut Climate Change Review does not canvass a concept of extending gateways—the range of potential trajectories is established before scheme commencement, and there appears to be no explicit interval for extensions.

As with scheme cap extension, longer intervals reduce the guidance period. If gateways were extended by one year every year, that would provide 14–15 years of guidance at any time. However, extending gateways by five years every five years would provide 10–15 years guidance at any time.

Since gateways play a more strategic role in future policy, a longer timeframe is likely to be desirable. A review of gateways, taking into account developments in international negotiations, could take place at each five-year scheme review (see Chapter 13) This would still provide a minimum of 10 years guidance and possibly up to 15 years of certainty, depending on the point in the review cycle.

4.10 Preferred position

Gateways would be extended by five years, every five years, as part of a strategic review of international conditions and Australia's likely future international commitments.

4.4 Adjustment of scheme caps

Scheme caps may have to be adjusted in the light of international developments or to allow for expansions in scheme coverage.

4.4.1 Adjustment in the light of international developments

Setting scheme caps five years in advance is an exercise in risk management. There is considerable uncertainty about international developments after 2012, with little clear direction on the likely outcome of negotiations. If caps are set five years in advance, future shifts in the international situation may mean that the caps are out of step with other contributions.

Where scheme caps have already been announced, the Government has several options for the way in which it deals with those in its international negotiating position. If the Government were to commit to a national emissions trajectory that is stricter than that implied by the announced scheme caps, it would have two broad options.

- Option 1–The Government could tighten the scheme cap to match the change in Australia's international commitments. This could be done by buying back permits, or by reducing the number of permits that the Government sells at future auctions. Cancellation of permits is not considered in this section as it is proposed in Chapter 3 that the legislation provide that the Government cannot cancel permits without providing compensation. In both cases, a policy of altering the caps would transfer some of the risk of changes in Australia's international obligations to participants in the scheme. This would be disruptive to the market because it changes the anticipated supply of permits, thereby weakening the value of announcing caps in advance.
- Option 2–The Government could make up the shortfall on its own account rather than through the scheme. This could be achieved by the Government honouring international agreements through the purchase of international compliance units without changing the scheme cap. This is the approach recommended by the Garnaut Climate Change Review.[26]
- The Garnaut Climate Change Review position of greater certainty for investors is consistent with the Government's broader policy approach, whereby the Government makes up shortfalls in the national effort by purchasing international compliance units and promoting emissions reductions offshore.[27]
- By purchasing international units and quarantining the scheme from external shocks, the Government provides investors and others in the broader economy with certainty about short-term caps. This is consistent with the Government's broader climate change strategy.

The risk that the Government would have to buy international units is considered to be low, since it is proposed that scheme caps extend for only five years (or else to the end of a known international commitment). The Government will take domestic commitments and objectives into account when negotiating international commitments and so is in a position to manage risks over such a time horizon.

On balance, the purchase of international units by the Government is considered to be the more appropriate policy.

4.11 Preferred position

The scheme cap would not be adjusted in the event that it is incompatible with internationally negotiated national targets and, if necessary, the Government would make up any shortfall in internationally agreed targets by purchasing international emissions units.

4.4.2 Adjusting the cap for expansions in scheme coverage

Increases in scheme coverage (that is, the addition of new sources of emissions to the scheme) will necessitate an expansion in caps, progressively aligning the scheme cap with the national emissions trajectory. This could be done by converting some of the notional allocation (see Section 4.2) into a real allocation. In a scheme that covers 100 per cent of national emissions, the national emissions trajectory and the cap will be identical and the notional allocation zero.

Where scheme caps have already been announced, there are several options for their treatment:

- The Government could make no decision and announce the cap increase at the time that the new sources of emissions are added.
- The Government could announce in advance the exact number of tonnes that will be added to the cap when a new sector is introduced.
- To encourage smooth adjustment, the Government could instead announce the detailed criteria (or a decision rule) on which expansion will be based. For example, the rule could require that the cap expand by an amount equal to the average emissions as reported under the National Greenhouse and Energy Reporting System legislation or National Greenhouse Gas Inventory in the two years preceding coverage, minus a certain (predetermined) percentage designed to reflect the newly covered sector's responsibility to abate in the intervening period.

In practice, a decision rule could work as follows:

- Say that agriculture were to be included in the Carbon Pollution Reduction Scheme from 2015, and that agriculture emissions are reported under the *National Greenhouse and Energy Reporting System Act 2007* from 2011.
- The Government could announce in advance the increment that it will add to the scheme cap when agriculture is included in the scheme. This would be X per cent below the average annual reported emissions for agriculture for the years 2011 to 2013, and would decline proportionally with the rest of the scheme cap for following years; that is, if the cap for the initially covered sources of emissions is to reduce by Y per cent a year, then the addition to the cap to accommodate agriculture would also decline by Y per cent a year.

If the market is not given information on how the cap will be expanded it will be difficult for it to accurately assess how the addition of a new sector will impact on the price. Therefore, that option is not proposed.

There is inherent uncertainty about the emissions from uncovered sources and the impact that their inclusion will have on the market. The decision rule must balance the need to provide certainty about future issuance against the risk of major market disruption which could result if estimates are incorrect.

Because of the uncertainties about emissions from uncovered sources, the option of specifying well in advance the exact number of tonnes that would be added to the cap is not supported. The addition to the cap could inadvertently be made too tight or too loose.

The option of providing a decision rule in advance balances the desirability of providing some information against the need to maintain some flexibility in dealing with future uncertainty. The decision rule option allows the Government to specify in advance the stringency of the addition to the cap relative to historical emissions from the newly covered source, without committing in advance to a particular absolute emissions figure.

4.12 Preferred position

The Government would announce an approach in early 2010 for expanding the cap to accommodate increases in scheme coverage that provided a smooth scheme price path.

The Government seeks comment on the appropriate decision rule to facilitate this approach.

4.5 Timing of announcements of the indicative national emissions trajectory and scheme caps

Indicative national emissions trajectory announcements

The Government has committed to providing a firm indication of its medium-term national targets and the path of scheme caps by the end of 2008. Those announcements will take into account modelling work being undertaken by the Treasury and the Garnaut Climate Change Review (see Chapter 1), and scheme design.

National target averages under the Kyoto Protocol are already known for the years up to and including 2011–12. The indicative emissions trajectory will be consistent with the remaining four years of this commitment period. It is proposed that at the end of 2008, in the context of the white paper, the Government announce the five-year indicative national emissions trajectory for the period 2008–09 to 2012–13 (that is, to the end of the Kyoto commitment period, and including the true-up year). This trajectory would be augmented by a medium-term national target range that takes into consideration developments in the international negotiating environment.

As discussed in Section 4.1, the intention is to maintain an indicative emissions trajectory of five years at all times, once the scheme commences. The Government proposes that in order to maintain five years of guidance before the scheme commences in 2010, it announce a further two years of the indicative national emissions trajectory, up to and including 2014–15, or longer if there is clarity regarding international commitments beyond this period.

4.13 Preferred position

At the end of 2008, in the context of the white paper, the Government would announce the indicative national emissions trajectory for the period 2010–11 to 2012–13, and in 2010 the Government would announce a further two years of the trajectory up to and including 2014–15, or to the end of any international commitment period, whichever is longer.

Scheme caps and gateway announcements

The Government will need to decide on the form of guidance it will provide on scheme caps at the end of 2008, in the context of the white paper.

In making a timing decision, the Government will need to consider the availability of the following information:

- Australia's emissions target for its 2008–12 Kyoto Protocol commitment is already known; however, international commitments beyond 2012 are not expected to be known.
- Modelling, which takes into account more accurate nearer term assumptions about emissions, complementary policies and economic data.

- *National Greenhouse and Energy Reporting Act 2007* data for 2008–09 will not be available to the Government until November 2009. Moreover, while this will provide useful information, it is not expected to provide a complete and accurate picture of covered emissions in 2008–09 (it would be unreasonable to expect complete accuracy in the first year of data collection).

There are three broad announcement options:

- The Government could defer all announcements about scheme caps to 2010, just before the scheme begins.
- The Government could announce the caps for the first several years of the scheme.
- The Government could announce the detailed criteria (or a decision rule) on which the cap decision will be based. A decision rule could consider any data available when the time the scheme caps were being set before the commencement of the scheme.

A 2008 scheme cap announcement would provide early guidance for investors. However, as noted above, data on covered sector emissions would not be available and Australia's international obligations would not be known beyond 2012. The costs of errors from premature cap-setting could be high, since it is proposed that caps, once set, will not subsequently be adjusted. For this reason, it is proposed that the Government not announce caps at the end of 2008, when the medium-term national target is released.

In contrast, a decision rule would provide guidance to the market without needing to predict the new information that will be available beyond 2008. As discussed above, the decision rule could be a function of both the emissions data from National Greenhouse and Energy Reporting System and international commitments agreed to before the commencement of the scheme. As the required information became available, it would be considered in the light of the decision rule.

For example, a decision rule could require that the cap be set so that it is equal to the average 2008–09 emissions as reported under National Greenhouse and Energy Reporting System legislation, minus a percentage. The percentage would be based on Australia's international commitments and indicative national emissions trajectory to ensure that scheme caps are consistent with those measures.

When more accurate data on national emissions become available closer to when the scheme begins in 2010, the Government could then announce the finalised scheme caps for the first five years of the scheme, as well as the 10 years of gateways beyond this period (see Figure 4.5).

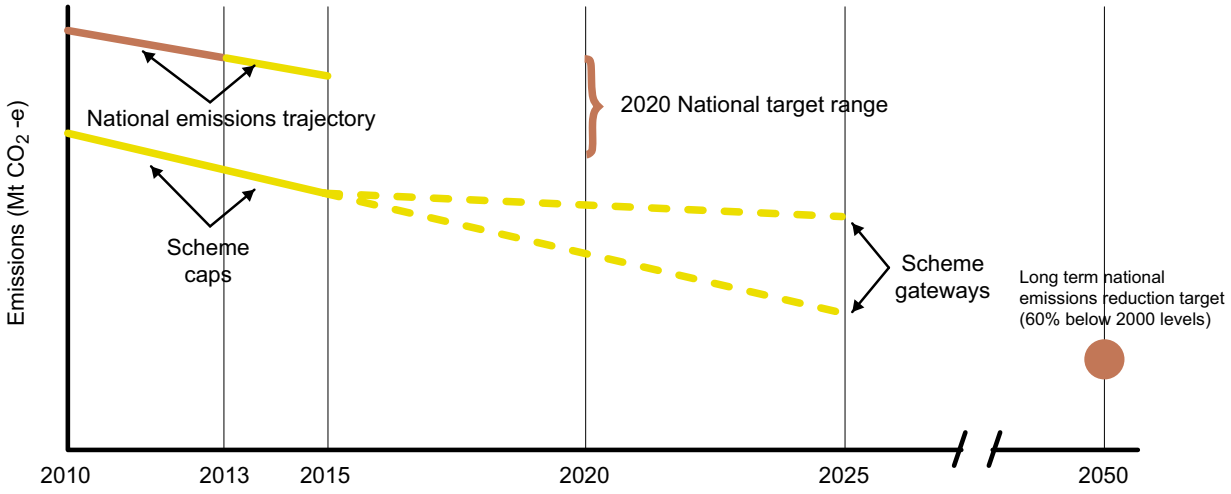
The Government seeks comment on the appropriate decision rule to facilitate this approach.

4.14 Preferred position

At the end of 2008, in the context of the white paper, the Government would announce an approach for setting scheme caps for the period 2010–11 to 2014–15, consistent with the national emissions trajectory.

In early 2010, the Government would announce the finalised scheme caps for the first five years of the scheme (2010–11 to 2014–15) and 10 years of gateways beyond this period.

Figure 4.5 2008–2010 Guidance over scheme caps and indicative national emissions trajectory



2008 announcements—Brown
2010 announcements—Yellow

Endnotes

1 Proposal for a Decision of the European Parliament and of the Council on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

2 Agriculture emissions reporting in Australia's inventory are a three year average, for example, 1990 is an average of 1989, 1990 and 1991.

3 Garnaut Climate Change Review, *Draft Report-June 2008*, Commonwealth of Australia, 2008.

4 Proposal for a Directive of the European Parliament and of the Council 2008/0013 of 23 January 2008 amending Directive 2003/87/EC.

5 European Commission, Directorate General for Environment, Review of the EU Emissions Trading Scheme—survey highlights, survey conducted by McKinsey and Company and Ecofys, November 2005.

6 New Zealand Government, *The Framework for a New Zealand Emissions Trading Scheme*, September 2007.

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9 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

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14 New Zealand Government, *The Framework for a New Zealand Emissions Trading Scheme*, September 2007.

15 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

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18 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

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21 Proposal for a Directive of the European Parliament and of the Council 2008/0013 of 23 January 2008 amending Directive 2003/87/EC.

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23 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

24 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

25 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

26 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

27 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

5. Reporting and compliance

This chapter describes how entities would comply with their obligations under the scheme, including the monitoring and reporting of emissions, the keeping of appropriate records, how liable entities would be defined, the surrender of carbon pollution permits or other eligible compliance permits, and the enforcement provisions that would apply if entities do not meet their obligations under the scheme.

Effective reporting and compliance arrangements would be critical to guarding the environmental integrity and economic efficiency of Australia's Carbon Pollution Reduction scheme.

As part of meeting their obligations under the scheme, liable entities would be required to monitor and report their annual emissions, keep adequate records to enable the assurance of reported emissions, surrender eligible compliance permits equal to their annual emissions, and comply with enforcement provisions. The term eligible compliance permits refers to carbon pollution permits and eligible Kyoto units.

This chapter is structured as follows:

- Section 5.1 discusses the interaction of the scheme with the National Greenhouse and Energy Reporting System (NGERS).
- Section 5.2 discusses how liable entities would be defined for each covered facility or activity and the exact point in the supply chain at which scheme obligations would arise.
- Section 5.3 outlines how entities are to estimate, monitor and report their emissions and how the integrity of emissions estimates would be assured.
- Section 5.4 outlines mechanisms for the surrender of eligible compliance permits and the operation of a national registry.
- Section 5.5 discusses compliance and enforcement provisions.

5.1 The National Greenhouse and Energy Reporting System

Where compliance and measurement regimes are in place for other government reporting processes, the Government would seek to streamline compliance and reporting under the scheme by utilising those existing systems to the maximum extent possible, only complementing those regimes where required. Key regimes the Government would seek to utilise include NGERS and those in place for the reporting of fuel quantities for the fuel excise and customs duty systems.

The *National Greenhouse and Energy Reporting Act 2007* introduces a single national reporting framework for the reporting and assurance of information related to greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production. The *National Greenhouse and Energy Reporting Act 2007* states that one of its key objectives is to underpin the introduction of an emissions trading scheme and the Act has been widely supported by industry and other non-government groups.

To streamline reporting and compliance for entities and to ensure that the emissions trading scheme is implemented smoothly, wherever practical NGERS would be the starting framework for monitoring, reporting and assurance of emissions under the scheme. However, in some areas, NGERS would need to be strengthened to support the financial importance attached to the emissions reported under the scheme. In considering the specific elements of NGERS for emissions trading, it is important that any potential modifications take into account the wider goals of NGERS for improving the collection of energy and emissions data.

5.1 Preferred position

NGERS would be the starting framework for monitoring, reporting and assurance under the scheme, and elements of that system would be strengthened to support the scheme.

Where practical, the scheme would also seek to utilise related provisions in other Australian Government schemes, such as the fuel excise and customs duty arrangements for liquid fuels, to minimise additional compliance burdens.

5.2 Defining the liable entity

For each source, the Government would need to decide the exact point in the supply chain at which obligations under the scheme would arise. As proposed in Chapter 2, facilities that emit 25,000 tonnes of CO_2-e (carbon dioxide equivalent) or more per year would be covered by the scheme, as would entities such as upstream fuel suppliers. Once a facility or activity comes within coverage, it would be important that a single entity be identified as responsible under the scheme for associated obligations.

Under NGERS, obligations to report emissions are imposed on the controlling corporation of a company group where a member of the group has operational control over a facility emitting 25,000 tonnes CO_2-e or more, or which produces or consumes 100 terajoules of energy per year or more. The entity with operational control is generally defined as the entity with authority to introduce and implement operating, health and safety, or environmental policies for a facility.

The feasible options available to the Government in determining where obligations would arise under the scheme are to adopt the same general approach as NGERS, or to develop an alternative framework in which scheme obligations would fall on entities which have financial control over, or own a share in, a covered facility.

In assessing whether operational or financial control is the best framework for allocating obligations under the scheme, it would be important for the Government to consider options that reduce compliance costs for liable entities and minimise implementation risks.

In most cases, a single entity would own and operate a facility that is covered under the scheme. In such cases, defining the point of liability would be straightforward, with no difference between operational or financial control approaches. Selecting a liable entity would be more complex where operational and financial control over a facility are separated or where a facility is owned by a number of entities.

If a financial control approach were adopted for the scheme, the Government may need to apportion obligations in circumstances where a covered facility is jointly owned by several entities. Such a situation could create administrative complexity and increase implementation risks for the scheme. This approach would also amount to a departure from the approach under NGERS, to which entities are currently adapting for the purposes of emissions and energy reporting.

Adoption of an operational control approach would be consistent with reporting obligations that entities have been preparing for since the introduction of the *National Greenhouse and Energy Reporting Act 2007*, thereby reducing compliance costs for the scheme. By placing scheme obligations on the entity that controls the day to day operations of the facility, an operational control approach may also increase opportunities for identifying and implementing behaviour or technology changes at the facility level.

To reduce compliance costs and implementation risks, the Government's preferred position is to adopt an operational control approach, based on that in NGERS, to allocate obligations under the scheme. For corporations, scheme obligations would generally be placed on the controlling corporation of a company group where either the controlling corporation or a member of the group has operational control over a covered facility or activity.

The Government would also need to make decisions about the treatment of facilities where multiple entities are involved in its operation.

In cases where multiple entities exercise a degree of operational control over a covered facility, making the placing of scheme obligations on a single entity more difficult, parties would be required to nominate a single entity responsible for obligations in relation to that facility or activity. In such cases the regulator would also have power to determine the responsible entity.

Unincorporated entities with operational control over a covered facility would also have obligations under the scheme. This could include partnerships, trusts, government and non-government organisations (for example, where waste landfill sites are operated by unincorporated local government councils), or individuals (who are involved in large facilities). The *National Greenhouse and Energy Reporting Act 2007* would be amended to oblige such unincorporated entities to report their emissions to the Government.

The Government intends to undertake further consultation and analysis over the second half of 2008 on how the operational control approach would be defined in relation to other special cases, such as forestry and upstream fuel suppliers (for example, to align with fuel excise and customs duty administrative arrangements).

5.2 Preferred position

In general, entities with operational control over covered facilities or activities would be liable for emissions obligations arising from those facilities or activities under the scheme.

- Where multiple entities exercise a degree of operational control over a covered facility or activity, a single responsible entity would be required to register and meet scheme obligations.
- For corporations, obligations would be placed on the controlling corporation of a company group where either the controlling corporation or a member of the group has operational control over a covered facility or activity.
- Unincorporated entities would also be liable under the scheme if they have operational control over a covered facility or activity.

Further consultation and analysis would be undertaken on the definition of liable entities under the scheme in relation to the forestry sector, upstream fuel suppliers (for example, to align scheme obligations with fuel excise and customs duty liability).

5.3 Monitoring, reporting and assurance

After liable entities are defined, the next steps in the compliance framework relate to monitoring and reporting covered emissions. For the scheme to function efficiently, it would also be important that assurance processes are in place to provide confidence to the market that the reported data are accurate and credible.[1]

Given the central role of emissions data in the scheme, a strong monitoring, reporting and assurance regime is needed. Stakeholders recognised this need in submissions to the National Emissions Trading Taskforce. For example, the Australian Industry Greenhouse Network stated that 'an ETS would require mandatory reporting with stringent verification and auditing protocols'.[2] Without a strong assurance regime, data reported under the scheme may not effectively underpin an efficient price signal.

An effective monitoring, reporting and assurance regime has three important elements:

- the monitoring of emissions, which describes the methodologies or equipment that entities would use to measure or estimate their emissions
- the reporting of emissions, which describes the format and timeframe for the submission of an entity's emissions statement under the scheme
- the assurance of emissions, which describes the way in which emissions reported by entities are assured as credible and accurate.[3]

To promote efficient outcomes, the regime should seek to minimise compliance costs and avoid duplication by adopting current practices and guidelines wherever practical.

5.3.1 Monitoring

Under the scheme, liable entities would be required to monitor their emissions according to defined methodologies to determine their obligation each year, and to keep appropriate documentation and records to enable reported emissions to be assured.

Emissions monitoring and estimation can take several forms, from the use of observable activity data to estimate emissions, to site-specific sampling, through to direct measurement of emissions. The classes of methodologies available for use under NGERS are set out in Box 5.1.

Box 5.1
Classes of methodologies available for NGERS

Method 1: the National Greenhouse Accounts default method

Method 1 provides a class of estimation procedures derived directly from the methodologies used by the Department of Climate Change when preparing the National Greenhouse Accounts. The use of methodologies from the National Accounts anchors Method 1 within the international guidelines adopted by the United Nations Framework Convention on Climate Change for the estimation of greenhouse emissions.

Method 1 specifies the use of designated emission factors in the estimation of emissions. These emission factors are national average factors determined by the Department of Climate Change using the Australian Greenhouse Emissions Information System.

Method 2: a facility-specific method using industry sampling and listed Australian or international standards or equivalent for analysing fuels and raw materials

Method 2 enables entities to undertake additional measurements—for example, the qualities of fuels consumed at a particular facility—in order to gain more accurate estimates for emissions for that particular facility. This method draws on the large body of Australian and international documentary standards prepared by standards organisations to provide benchmarks for procedures for analysing the properties of fuels being combusted.

Method 2 also draws on existing technical guidelines used by reporters under the Generator Efficiency Standards program.

Method 3: a facility-specific method using Australian or international standards or equivalent for sampling and analysing fuels and raw materials

Method 3 is very similar to Method 2, except that it requires reporters to comply with Australian or equivalent documentary standards for sampling (of fuels or raw materials) and documentary standards for analysing fuels.

Method 4: direct monitoring of emission systems, on either a continuous or periodic basis.

Method 4 provides for a different approach to the estimation of emissions. Rather than analysing the chemical properties of inputs (or, in some cases, products), Method 4 aims to directly monitor greenhouse emissions arising from an activity. This approach can provide a higher level of accuracy depending on the type of emission process, however it is more data-intensive than other approaches.

As for methods 2 and 3, a substantial body of documented procedures on monitoring practices and state and territory government regulatory experience provides the principal source of guidance for the establishment of the system proposed under Method 4.

The NGERS methodologies have been developed in conformance with international obligations and with Australia's National Greenhouse Accounts. Consistency with those frameworks is likely to have important implications for the integrity of the Carbon Pollution Reduction Scheme and its potential for international linking.

Even the simplest of the NGERS methods (Method 1) provides estimates using national averages and ensures the accuracy of emissions at the scheme level. While all methods involve some level of inaccuracy, facility-specific accuracy tends to increase as monitoring and estimation moves through the methodologies to those encompassing more direct sampling and measurement. However, because industries and processes vary, using particular methods in different circumstances can produce different levels of data quality. For example, Method 2 used in one sector might provide greater accuracy than Method 4 used in another.

To streamline reporting, the Government's preferred position is that the monitoring methodologies available under NGERS also be used to support emissions reporting under the scheme.

5.3 Preferred position

Emissions estimation methodologies under the scheme would be those available under the National Greenhouse and Energy Reporting System.

Available methodologies

With NGERS methodologies as the starting point, the Government would need to decide which methods entities in each sector would have available to them for monitoring and estimating their emissions, and thus their obligations under the scheme. In general, 'higher order' methods would produce more accurate emissions estimates for sources at the facility level than would lower methods, but also have different compliance costs. The Government could take a number of approaches.

First, the scheme could adopt the approach taken under NGERS, which gives entities the flexibility to choose between methods 1 to 4, for all emission sources. While all methods ensure the accuracy of emissions estimates at the scheme level, it may be that the greater facility-level accuracy provided by methods 2 to 4 is desirable under the scheme. Greater accuracy in facility-level emissions information would increase the fairness of the scheme by ensuring that each facility faces carbon costs that most accurately reflect their specific emissions profile. More accurate facility level information would also increase scheme efficiency by revealing more abatement opportunities because a more detailed understanding of a facility's emissions profile would be available.

However, these benefits need to be weighed against the potential higher costs of more accurate methodologies. There could be a case for limiting the choice of methods allowed under the scheme if the benefits to the fairness and economic efficiency of the scheme outweighed the costs of more accurate methodologies.

Second, the scheme could set a 'statistical uncertainty bound' that entities would need to meet when reporting their emissions. This option would be similar to that adopted in the European Union Emissions Trading Scheme, where allowable levels of uncertainty

vary, depending on the installation involved—larger installations are required to more accurately calculate their emissions. Currently, entities are required to self-estimate and report the uncertainty of their data under NGERS; however NGERS does not mandate the uncertainty range to be achieved.

Specifying a desired uncertainty bound for emissions reporting would allow the Government to set the level of uncertainty acceptable for emissions reporting under the scheme. However, it also requires the specification of methods for calculating uncertainty (which adds complexity) or requires participants to self-estimate uncertainty (which might reduce transparency). The broad coverage of the scheme also means that emissions estimates are likely to be more uncertain in some sectors and sources than in others (for example, in the land-based sectors compared to sectors that burn fuel), leading to the need to specify different uncertainty ranges for different emission sources and adding further complexity. As a result, the Government is not in favour of specifying explicit uncertainty bounds at scheme commencement. If these issues could be overcome in the future, an uncertainty based approach which gave entities the flexibility to choose methods that most efficiently meet required facility level accuracy thresholds could be considered as the scheme matures.

Third, minimum estimation methodologies could be specified for use by liable entities for estimating specific emission sources. This would provide clear guidance to entities on the required methods while allowing for the increased efficiency of the scheme through improvements in the standards over time. This approach would also allow the Government, in consultation with industries, to balance the measurement and compliance costs of raising minimum standards with the overall benefit to the scheme of more accurate emissions information. If a minimum standard was introduced for a source, entities would still be able to choose between that and 'higher order' methods. Where no minimum standard was set, entities would be able to choose between all methods available under NGERS.

Assessed against the criteria listed in Chapter 1, the third option is superior to the others. Setting minimum estimation methodologies for emission sources in specific sectors best captures efficiency gains under the scheme while balancing those gains with additional costs to reporting entities. However, it would be most important that the Government seeks to minimise implementation risks and transitional costs, especially at scheme commencement. At commencement, the Government should not require the use of methodologies that are not already in widespread use for current reporting purposes under NGERS, the National Greenhouse Accounts, state-based reporting or other Australian Government programs (for example, Generator Efficiency Standards and Energy Efficiency Opportunities). In most cases, this would mean that entities would be able to choose between the use of unbiased default methodologies to estimate emissions (NGERS Method 1) and more accurate, facility-specific, 'higher order' estimation methods (NGERS methods 2–4).

Where facility-specific methodologies (methods 2–4) are already in widespread use for a source, those practices should continue under the scheme. For example, facility-specific methods are widely used for reporting emissions from electricity generation, perfluorocarbon (PFC) emissions from aluminium smelting and fugitive emissions from underground coal mines. In these cases, the continuation of these practices would

increase the efficiency and fairness of the scheme, with minimal additional costs arising from the use of these methods from commencement.

To capture these benefits, it is the Government's preferred position that minimum emissions estimation methodologies be imposed from the commencement of the scheme for electricity sector emissions, PFC emissions from aluminium production and fugitive emissions from underground coal mines. While the electricity sector is currently restricted to methods 2–4 under NGERS, amendments to the NGERS legislation would be required to apply the same restriction for PFC emissions and fugitive emissions from underground coal mines at commencement.

Box 5.2
Higher order methodologies currently used in specific sectors

Electricity sector

Under NGERS, reflecting widespread commercial practice and the current requirements of the Generator Efficiency Standards program, the electricity generation sector is required to use higher order methodologies for calculating entities' emissions from the combustion of coal and gas. Generators that meet certain thresholds are required to report carbon dioxide emissions estimates using methods 2–4.

Perfluorocarbon emissions

PFC emissions from the aluminium sector are currently estimated using facility-specific estimation methodologies as widespread business practice. Aggregated sector estimates voluntarily provided to the Australian Government are used to inform the National Greenhouse Accounts.

Fugitive emissions from underground coal mines

Underground coal mines are currently required by state regulators to monitor emissions via higher order methods for the purposes of occupational health and safety regulations. A number of major companies also voluntarily report these data in annual reports. The data are also used to inform the National Greenhouse Accounts.

To minimise implementation risks it is the Government's preferred position that, apart from the sources mentioned in Box 5.2, entities would have the option of choosing between all methods (methods 1–4) set out for NGERS for at least two years after the scheme begins.

While setting minimum methodologies for other sources from commencement may introduce implementation risks, it is probable that these costs can be better managed once the scheme is established. For example, as the scheme matures and entities gain more experience in monitoring and reporting their emissions, new and improved measurement methodologies would probably be developed around existing technologies and processes. As more accurate methods are increasingly used for a particular source, the additional costs of moving to more accurate minimum level methodologies would fall.

For this reason, the Government's preferred approach is to consider staged increases in the required accuracy of emissions estimates after the scheme has begun, where the benefits to the efficiency of the scheme outweigh the compliance costs of implementing more accurate monitoring methods.

Following industry feedback, the Government considers that some specific emissions sources could move to higher order methods (NGERS Methods 2–4) after 2012. Those sectors are outlined in Box 5.3. Comments are sought on these or other sources that could be considered for higher order measurement methods following the commencement of the scheme.

Box 5.3
Sources for which more accurate emissions monitoring methods could be considered after 2012

Coal (non-electricity uses)

In addition to its use in electricity generation, coal is also consumed directly by a number of large industrial emitters, such as the iron and steel, non-ferrous metal and cement industries. Given the size of these industrial operations and the variation in the carbon content of coal from different sources, the benefits to the scheme of increased accuracy of reporting by those sources may outweigh the additional costs of using more accurate estimation methods. Such an approach would also bring large industrial coal users into line with methodologies used in the electricity sector and remove differences in the treatment of different industries.

Natural gas (non-electricity uses)

Natural gas is also consumed in large volumes by industries other than electricity generation. Emissions per unit of gas vary by about 2 per cent depending on its source; however, the availability of data on the composition of gas within specific transmission and distribution pipelines would need to be assessed before higher methodologies could be imposed. Further investigation would also be required of the extent and reliability of gas composition analyses across Australia, possible problems associated with disclosing commercial information, the appropriate threshold, and the implementation costs of such an approach.

Emissions from solid waste

Emissions from solid waste at different sites depend on such factors as historical waste volumes, organic composition, site management practices, environmental conditions (geographical location) and the oxidation of methane in the landfill cap. The NGERS default factors are based on international estimates for several of these factors and do not currently allow for facility-specific variation in emissions. Several technologies currently available with higher site-specific accuracy, such as 'flux box' technology, may result in higher accuracy that is cost effective. To date, the use of higher order approaches in Australia has been low; however, these methods are being applied more commonly in international technology developments and improved landfill management practices.

5.4 Preferred position

Noting the four classes of methodologies available for NGERS (see Box 5.1), where Method 2 or above is already in widespread use for a source, those methodologies would be imposed as the minimum to be used from the commencement of the scheme.

The following sources would have minimum standards for emissions estimation methodologies imposed from the commencement of the scheme:

- electricity sector emissions (as required for the National Greenhouse and Energy Reporting Scheme and the Generator Efficiency Standards program)
- perfluorocarbon emissions (from aluminium production, as is current business practice and used for the National Greenhouse Accounts)
- fugitive emissions from underground coal mines (as currently mandated by state safety regulations for the large majority of mines).

Staged increases in the accuracy of emissions estimates over time would be pursued by imposing increasing minimum standards for estimation methodologies, where this is cost effective for the scheme overall.

Additional sources would be investigated for the possible imposition of minimum standards for emissions estimation methodologies soon after the commencement of the scheme, but not in the first two years of the scheme. Sources that may warrant investigation include:

- emissions from coal use (non-electricity, such as steel production)
- waste sector emissions
- natural gas combustion emissions (non-electricity)
- fugitive emissions from open-cut coal mines.

Comments are sought on these or other sectors that could be considered for higher order measurement methods following the commencement of the scheme.

Special case: methodologies for upstream fuel liabilities

As proposed in Chapter 2, to minimise compliance costs under the scheme, fuel suppliers would be liable for the greenhouse gas expected to be emitted from the fuel they supply. Fuel suppliers would be obliged to surrender permits equal to the emissions embodied in the quantities of fuel they supply to other entities who do not have direct obligations under the scheme.

Under these arrangements, fuel suppliers would be required to adopt special arrangements for estimating their obligations. These arrangements would involve measuring the quantities of fuel supplied to other entities who do not have direct obligations under the scheme, and determining the factors to be applied to those quantities to reach an estimation of emissions.

There are already some systems which measure the quantity of fuel supplied to other entities and assure the quality of this data. They include the fuel excise and customs duty systems for the supply of liquid petroleum. To streamline compliance, the scheme would seek to utilise these arrangements wherever practical. In preparation for the scheme, the Government would work with industry to further develop and refine the details of these methodologies.

5.5 Preferred position

Further consultation and analysis would be undertaken to establish appropriate reporting requirements and emissions estimation methodologies relating to the obligations of upstream fuel suppliers under the scheme.

Notification of changes to methodologies

Over time, it is likely that the Government would need to amend the methodologies available for use under the scheme. For example, because methodologies are based on international standards, changes to those standards would need to be reflected in scheme methodologies. Alternatively, minimum standards for some methodologies may be increased over time. In these circumstances, the Government would need to consider how much notice is to be provided before an amended domestic methodology takes effect.

Major changes to international estimation methodologies, such as revisions to global warming potentials for gases other than carbon dioxide, have potential implications for the scheme cap and market prices, particularly where such changes have a general effect across all entities. Consistent with the treatment of other significant scheme parameters, it is proposed that five years notice be given before such changes take effect in the Carbon Pollution Reduction Scheme.

On the other hand, less significant revisions to methodologies should be able to be made on a more flexible basis. In considering an appropriate notice period for such revisions, the Government would need to take into account:

- the time needed to implement new minimum-level methodologies
- the need for certainty around available reporting methodologies
- the notice that entities would need to manage transition costs.

Because sectors' response times would vary with their circumstances, current technology and the extent to which higher order methods have permeated a sector, the notice to be given for less significant changes should be determined on a case-by-case basis.

5.6 Preferred position

Consistent with adjustments to the scheme trajectory, five years notice would be given before major revisions of emissions estimation methodologies that affect the majority of stakeholders.

Consultation would be undertaken and appropriate notice would be given before imposing or increasing minimum standards for emissions estimation methodologies.

Consistency of data over time

While the use of Method 1 would be restricted under the scheme in the circumstances outlined above, for all other sources the Government would need to decide whether entities would be allowed flexibility to move between available methodologies at their discretion, or whether there should be restrictions on the frequency and/or the direction of movements between available methods.

Unlimited scope to nominate different methodologies at any time would mean that a liable entity could shift between them, possibly many times, giving rise to different emissions obligations under the scheme without any change in actual emissions or activity. Frequent methodological changes could also allow the selection of favourable methodologies in order to minimise year-to-year obligations, causing monitoring and assurance challenges for the scheme, instability in total measured emissions, and unforeseen financial implications for third-party investors. Such effects could challenge the transparency and fairness of the scheme.

As a way of addressing these issues, limitations could be placed on the scope for entities to switch between emissions estimation methodologies. Entities should reasonably be able to assess the costs and benefits of choosing a particular method several years in advance through their own research. Therefore, where an entity has elected, of its own choice, to use Method 2 or above to estimate its emissions obligations from a particular source, it is the Government's preferred position that this methodology would be the minimum standard for that entity for a period of four years. That is, firms would generally not be able to return to lower order methods for a period of four years, once this election had been made. The scheme regulator would have some discretion to grant exceptions to this rule; for example where it can be demonstrated that movement back to a lower level methodology would not result in any loss of precision in reported emissions data.

5.7 Preferred position

Noting the four classes of methodologies available for NGERS, where an entity has elected to use Method 2 (see Box 5.1) or above for a particular source, that methodology would be the minimum standard for that entity for a period of four years.

The scheme regulator may grant exceptions to this rule in some circumstances.

Documentation and records

Entities would be required to keep records of activities to show that emissions reports have been compiled accurately and to enable auditing of those reports. Section 22 of the *National Greenhouse and Energy Reporting Act 2007* sets out the current requirements for entities and individuals in relation to reporting emissions. Those requirements would be adopted for Australia's Carbon Pollution Reduction scheme. To allow reproducibility of the emissions estimates, information that would need to be retained could include:

- the list of all sources monitored
- the activity data used to calculate the emissions for each source, categorised by process and fuel or material type
- documents justifying the selection of the monitoring methodology
- documents detailing monitoring methods and the results from the development of facility-specific emission factors, biomass fractions and oxidation or conversion factors
- documents describing how activity data for the facility and its sources are collected.

5.8 Preferred position

Provisions relating to documentation and record keeping under the scheme would be based on those set out for the National Greenhouse and Energy Reporting System.

5.3.2 Reporting

Once liable entities have monitored and estimated their emissions, they would need to report them to the Government before surrendering permits. In addition to specifying methodologies, NGERS also establishes a system around the reporting of emissions to the Government, which would provide a starting point for emissions reporting under the scheme. However, the Government would need to consider whether any amendments to this system are required to support the scheme.

NGERS requires the annual submission of emissions reports by 31 October each year. The Government could require entities to report annually on their emissions, or alternatively could allow entities the flexibility of more frequent reporting periods, for example, quarterly.

More frequent reporting of emissions information could be expected to provide some benefits to the scheme, including that the timely flow of price sensitive information to the market throughout the year would result in a more stable market. However, the benefits would need to be weighed against the possibility of higher compliance costs for entities. While the proposal to allow entities the flexibility to report emissions at multiple times throughout the year warrants further investigation, the short timeframe before the scheme is implemented and the system changes it would require, preclude this as an option for when the scheme commences.

To minimise implementation risks, the Government's preferred position is that a single report submitted by 31 October would fulfil an entity's reporting obligations under both NGERS and the Carbon Pollution Reduction Scheme.

As envisaged under NGERS, entities would be able to report emissions data via the Government's Online System for Comprehensive Activity Reporting (OSCAR). Where liable entities currently report to the Government through another system, for example for imports of synthetic gases, the Government would seek to coordinate those systems with OSCAR to minimise compliance burdens.

The Government would need to decide when information provided to the market would be published and the level of detail of that information. In its current form, the *National Greenhouse and Energy Reporting Act 2007* sets a final publication date of 28 February for reported emissions and energy data. There are strong arguments that Australia's Carbon Pollution Reduction Scheme would be more efficient if emissions information is supplied to the market as soon as possible after its submission to the Government. The aim of prompt publication would be to inform the market before the final date for surrender of permits (see Section 5.4). On this basis, the Government's preferred position is that the date for the public disclosure of emissions data under the scheme should be brought forward from the final date set under NGERS (28 February) to as soon as feasible after 31 October.

Market efficiency will also be enhanced through the provision of detailed information to the market. In its current form, the *National Greenhouse and Energy Reporting Act 2007* allows emissions and energy data reported at the entity level to be published (section 24), with provision for entities to request that information not be published in certain circumstances (section 25). The Government needs to decide whether the publication of entity-level information, as allowed for under the *National Greenhouse and Energy Reporting Act 2007*, is sufficient to support an efficient carbon market, or whether the scheme should provide for the publication of more detailed emissions data (such as facility-level data).

The publication of facility-level data would deliver efficiency dividends to the scheme by providing the market with more detailed information about the structure and nature of an entity's obligations under the scheme. However, as envisaged in section 25 of the *National Greenhouse and Energy Reporting Act 2007*, public disclosure of some commercially sensitive data may cause concerns for some entities. Recognising these competing issues, the Government seeks feedback on whether the scheme should provide for the publication of reported information down to the facility level.

5.9 Preferred position

A single report would be sufficient to satisfy an entity's obligations under both the National Greenhouse and Energy Reporting System and the Carbon Pollution Reduction Scheme, with reports to be submitted by 31 October each year.

Emissions obligations under the scheme, the types of assessment methodologies used and any uncertainty estimates reported by liable entities would be published by the Government on the internet as soon as is feasible after reports are submitted.

The Government seeks feedback on whether the scheme should provide for the publication of reported information to the facility level.

5.3.3 Assurance

The Government would also need to decide the standards of assurance (or audit) to which reported emissions are subject in order to effectively underpin the scheme. Two broad options are available:

- assurance undertaken by independent third-party practitioners on a mandatory basis before the submission of an entity's emissions report
- self-assessment by entities, supported by a retrospective assurance regime managed by the Government.

Most trading schemes currently in operation require some form of third-party assurance of entities' emissions statements. Current examples are included in Box 5.4.

Box 5.4
Assurance in related schemes

- European Union Emissions Trading Scheme—All liable entities are required to submit emissions reports that have been assured by an accredited third party. Assurance is undertaken at the liable entity's expense.[4]
- New South Wales Greenhouse Gas Reduction Scheme—A third-party audit is required for all companies seeking to create certificates under the scheme. An audit and technical service panel has been established by the administrator, and audit may only be undertaken by members of that panel.[5]
- Mandatory Renewable Energy Target—The scheme's regulator (the Renewable Energy Regulator) can conduct audits of liability and compliance under the scheme.[6]
- Clean development mechanism (CDM)—All CDM projects are subjected to verification/certification by a designated operating entity, which is a third-party verifier accredited by the CDM Accreditation Panel and subject to regular performance spot checks by scheme authorities.[7]

An alternative approach is suggested for the proposed New Zealand Emissions Trading Scheme: entities self-assure their emissions reports, and the New Zealand Government undertakes any further assurance activity, on suspicion of non-compliance or on a risk management basis, after emissions reports are received.[8]

Assurance under the Australian scheme

It will be important for the Australian scheme's assurance regime to achieve economic efficiency via a stable and credible carbon market while not having to impose excessive compliance burdens on liable entities.

Poor-quality emissions data would affect market confidence and may undermine the credibility of the scheme, weakening its ability to drive efficient investment decisions and emissions reductions throughout the economy. Those risks would be most acute in the early years, when scheme credibility is being established and when the capacity of industries to report emissions is at its most immature. The integrity of emissions estimates under the scheme may also affect perceptions of the scheme internationally

and influence the scheme's ability to link with other schemes. For these reasons, it is imperative that the scheme is supported by a strong assurance regime.

Assurance of emissions reports by an accredited third party before their submission (the approach used in the European Union Emissions Trading Scheme[9]) would provide a high level of confidence to the market that reported data are complete and accurate, increasing the integrity and efficiency of the scheme.

Alternatively, the adoption of a self-assurance model would reduce compliance costs for liable entities but could risk the credibility of the scheme. The absence of third-party assurance could reduce market confidence in data underpinning the demand for permits.

Balancing these tensions, the Government's preferred approach is that the largest emitting entities have their emissions reports assured by third parties before they submit them. This approach would reduce risks to the scheme's credibility by assuring the quality of the information supplied to the market by the most significant emitters, while keeping costs down for smaller entities.

This approach is broadly similar to the regime currently in operation under the *Corporations Act 2001* in relation to the assurance of financial statements prepared by significant financial entities. Under the *Corporations Act 2001*, the most significant entities (publicly traded and large proprietary companies) are required to have their financial statements assured by accredited third-party auditors prior to lodgement with the Australian Securities and Investments Commission. Aligning financial and emissions reporting systems over time warrants further investigation to streamline reporting for entities that have obligations in both areas. However, due to the specific technical expertise required and the lack of agreed standards for assurance of emissions reporting, relying on financial reporting and audit systems for the Carbon Pollution Reduction Scheme at commencement might not provide adequate quality assurance for emissions-related data.

The Government's preferred position is that large emitters (that is, those with obligations of 125,000 tonnes of CO_2-e or more) be required to have their annual emissions reports assured by an independent accredited third party prior before submitting the reports to the Government. This threshold is broadly consistent with the 2008–09 corporate-level reporting threshold under NGERS and the Energy Efficiency Opportunities program. However, the number of entities caught by this threshold under the scheme would be lower than the number of entities reporting under NGERS, as only emissions for which the entity has scheme obligations would be counted towards the threshold test (for example, as proposed in Chapter 2, scheme obligations would exclude electricity and liquid fuel emissions covered upstream). The Government would consider the need to extend this requirement on the basis of experience on the scheme is implemented, developments relating to international linking and the compliance burdens that would be placed on smaller entities.

The regulator would also have powers to review annual emissions reports and amend assessments of entities' obligations under the scheme for up to four years after the date of assessment. However, in the case of suspected fraud this period would be unlimited. These periods of review are broadly consistent with amendment periods under current business tax provisions for entities with complex affairs. Generic enforcement provisions that would apply under the scheme are discussed in Section 5.5.

5.10 Preferred position

Large emitters (those with obligations under the scheme of 125,000 tonnes of carbon dioxide equivalent or more) would be required to have their annual emissions reports assured by an independent accredited third party prior to their submission. The Government would consider the need to extend this requirement on the basis of initial experience, developments relating to international linking and the compliance burdens likely to be placed on small entities.

The scheme regulator would have powers to conduct assurance audits using a risk-based approach for all emissions reports submitted under the scheme, as is the current approach under the National Greenhouse and Energy Reporting System. The regulator would also have the power to review an annual emissions report for up to four years after its submission, except in the case of fraud, in which case the period would be unlimited.

The Government would investigate further the scope to align financial and emissions reporting and verification systems.

Assurance standards, guidelines and accreditation

Assurance standards and guidelines are a key underpinning of any regulatory program requiring reporting of information. While assurance regimes for emissions information currently exist under some Australian Government and state government energy and emission reporting programs (such as Greenhouse Challenge), the Government would need to decide on assurance standards and guidelines to be applied to data reported under the Carbon Pollution Reduction Scheme.

The Department of Climate Change is working with the Auditing and Assurance Standards Board to develop auditing standards to apply under the *National Greenhouse and Energy Reporting Act 2007*. These standards would also take account of the financial implications of data reported under the scheme.

An accreditation system for auditors would also be established, with the form and nature of accreditation (including whether it is conducted by a government or a non-government body) determined with a view to minimising compliance costs while achieving the necessary standards and facilitating adequate capacity development. The Government would seek to streamline this process to ensure that a single accreditation system supports both NGERS and the Carbon Pollution Reduction Scheme.

5.11 Preferred position

Assurance under the Carbon Pollution Reduction Scheme would be carried out in accordance with guidelines made under the *National Greenhouse and Energy Reporting Act 2007* and standards produced by the Australian Government's Auditing and Assurance Standards Board.

All third-party assurance providers would be accredited to ensure the development of a pool of properly trained and qualified providers. The form and nature of accreditation (including whether it is conducted by the Government or a non-government body) would be determined after further consultation, with a view to minimising compliance costs.

5.4 Surrender of eligible compliance permits and the national registry

Liable entities would be required to surrender, for each financial year, a number of permits equal to their annual emissions under the scheme. Chapters 3 and 6 discuss the types of eligible compliance permits that would be accepted from the commencement of the scheme. Eligible compliance permits would include:

- carbon pollution permits
- certified emission reduction units—subject to qualitative and quantitative limits
- emission reduction units—subject to quantitative limits
- removal units.

As discussed in Chapter 3, it is proposed that under the scheme eligible compliance permits would be required to be surrendered annually. The Government would need to decide the exact compliance year for the scheme; for example, whether it operates on an Australian financial-year or calendar-year basis.

NGERS commenced on 1 July 2008 on a financial-year basis. This is consistent with Australia's international reporting under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol), which is also undertaken on a financial-year basis. Alternative compliance periods are not administratively feasible for the first year of NGERS because of technical constraints. As entities are already preparing to meet this requirement, compliance costs would be minimised if the compliance year for the Carbon Pollution Reduction Scheme is also based on the standard Australian financial year. The operation of the Australian scheme also would not hinder the international linking of the scheme if it were on a financial-year basis. The Government's intention is to commence the scheme in 2010. If the scheme does not commence on 1 July 2010, the first compliance period would be a part-year. For example, if it commenced on 1 October 2010, the first compliance period would be nine months.

5.12 Preferred position

The scheme would operate on a financial-year basis.

A national registry would be established to track the ownership of permits issued under the scheme and to manage their surrender. The registry would be used by a range of parties, including for the purposes of holding, transferring and surrendering permits.

Further details on the operation of the proposed national registry are provided in Appendix C.

Providing some time between the reporting of emissions (proposed as 31 October) and the final date for surrender of permits to meet an entity's obligation would reduce risks of price volatility by allowing greater opportunities for liable entities to phase their final purchases from the market. At scheme commencement, it is proposed that the final date for the annual surrender would be six weeks after the final date for emissions reporting. This period would allow enough time for reported emissions to be collated and published to inform the market, and for the regulator to issue assessment notices prior to the final date for the surrender of permits.

5.13 Preferred position

The final date for the annual surrender of permits would be a fixed time after the final date for emissions reporting. At scheme commencement, this period would be six weeks.

Although final compliance with an entity's obligations would not be determined until after the final surrender date, allowing entities to surrender permits throughout the year would give them additional flexibility to manage their carbon obligations. To ensure the integrity of the surrender process, once a permit has been surrendered by an entity, it would not be able to be revived or re-used under the scheme.

It is proposed that voluntary surrender of permits should also be allowed under the scheme to allow parties to contribute to stronger national climate change mitigation, regardless of whether they have obligations under the scheme. The voluntary surrender of permits would reduce the number available to liable entities to meet their obligations and would raise the price of permits. As this action is a reflection of legitimate value placed on voluntary surrender it should be permitted.

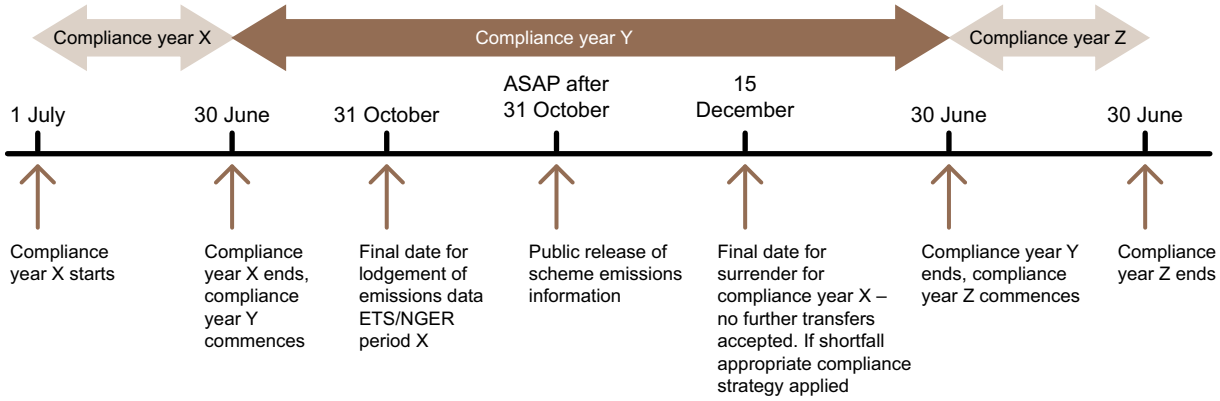
5.14 Preferred position

Liable entities would be allowed to surrender permits at any time before the annual surrender deadline to meet their end-of-year obligations (any permits surrendered would not be available for future compliance periods).

Any entity or individual would be allowed to voluntarily surrender permits regardless of whether they have obligations under the scheme.

Figure 5.1 provides an overview timeline for compliance processes, using 1 July 2010 as an indicative start date for the scheme.

Figure 5.1 Compliance timeline



5.5 Compliance and enforcement

Effective compliance and enforcement arrangements would be vital to achieving the objectives of the Carbon Pollution Reduction Scheme. Non-compliance with obligations (be it misreporting or failure to surrender permits) could bring the scheme into disrepute and undermine its environmental integrity. Detailed compliance and enforcement arrangements would be developed to support the key design elements of the scheme. A broad outline of possible approaches to compliance and enforcement is provided in this section to elicit early views of stakeholders, which could inform further work.

5.5.1 Key obligations in the scheme

The key obligations on liable entities under the Carbon Pollution Reduction Scheme are likely to be:

- to register for the reporting regime
- to lodge accurate emission reports, in accordance with the prescribed methods and standards, and keep associated records for assurance purposes
- to lodge emissions reports on time
- to surrender sufficient permits to balance emissions.

Obligations relating to emissions reporting would be met through NGERS under the *National Greenhouse and Energy Reporting Act 2007*, which would be modified to meet the requirements of the final design of the Carbon Pollution Reduction Scheme.

It is possible that further obligations would be defined as the details of the scheme are resolved.

5.5.2 Broad approach to compliance and enforcement

Compliance and enforcement encompass a broad spectrum of measures that allow a flexible and responsive approach to achieving legislative compliance. Once established, the scheme regulator would frame its own compliance program, setting out strategies, systems, tools and actions to promote the highest levels of compliance with the scheme.

Most liable entities are expected to comply voluntarily with legislation if they are provided with the relevant information and assistance. An initial focus of compliance activities is likely to be education and outreach, such as consultations on the design of administrative processes; provision of information (via the internet, seminars and other ways) to liable entities on how to comply; and providing convenient and inexpensive ways to interact with the regulator.

If these strategies fail to achieve an appropriate degree of compliance, a range of responses would be available, escalating to statutory enforcement of administrative penalties and, in more serious cases, civil and criminal penalties. These sanctions would match the seriousness of non-compliance, consistent with the 'enforcement pyramid' concept applied widely in other Commonwealth legislation.

An administrative penalty could be imposed on liable entities if they surrender too few permits to balance their emissions. In some circumstances a compliance penalty can form an effective price cap in the scheme (see Chapter 3). Enforcement provisions in the emissions trading legislation would be consistent with existing Australian Government policy. The *Guide to framing Commonwealth offences, civil penalties and enforcement powers*, published by the Attorney-General's Department, would be used to assist in the framing of proposed criminal offences, civil penalties and other enforcement provisions under the legislation.

5.5.3 Powers of the regulator

The emissions trading regulator would need powers to ensure that it can monitor compliance with the obligations imposed by the emissions trading legislation, educate liable entities, investigate suspected non-compliance and initiate enforcement action if necessary. These are likely to include powers relating to requesting information, inspection of books and facilities by officers authorised by the regulator, and entry into premises (with consent or with a warrant).

Powers are already available under the *National Greenhouse and Energy Reporting Act 2007* to require an external audit of the emissions report of a liable entity.

5.5.4 Other requirements for compliance and enforcement

The emissions trading regulator may need to be able to exchange information with relevant Australian Government, state and territory governments, and international regulators. For example, the regulator may need to exchange information with the Australian Securities and Investments Commission if it finds evidence of artificial transactions in carbon pollution permits (which are likely to inflate their price). It may also be desirable for the regulator to have the power to delegate monitoring to other agencies, with the responsible minister's approval, to facilitate multi-agency approaches where appropriate.

The application of international mutual assistance arrangements in relation to regulatory and criminal matters would need to be considered, as would mechanisms to prevent the use of emissions trading for money laundering and fraud.

Input would be sought from the relevant law enforcement agencies and stakeholders over the remainder of 2008 to ensure that the scheme embodies best practice approaches to compliance and enforcement.

5.15 Preferred position

The regulator would be given a range of compliance, investigative and enforcement powers, and a broad range of mechanisms to respond proportionately to non-compliance under the scheme.

The emissions trading regulator would be able to exchange information with relevant Australian Government, state and territory governments, and international regulators.

Compliance and enforcement provisions, including penalties, would be finalised over the remainder of 2008.

Endnotes

1 Accuracy refers to the general validity of the reported numbers from an accounting system. Accurate estimates are unbiased in that they do not systematically understate or overstate the true number. A related issue is precision. Precise estimates have small standard errors. Accuracy and precision are related, but can be independent. A system can be accurate (unbiased) but produce estimates of limited precision. On the other hand, extremely precise estimates can be biased if the system is not well designed. For the purposes of this chapter, the word 'accuracy' will be taken to include both accuracy and precision.

2 Australian Industry Greenhouse Network, *AIGN Response to the NETT*—January 2007, p. 14.

3 This chapter refers to the 'assurance' as opposed to the 'verification' of emissions reported by entities. This distinction is made to bring terminology into line with that used in the audit industry, where 'assurance engagements' are undertaken by accredited auditors to provide reasonable assurance that an organisation has complied with its reporting obligations; and to retain the principle that the reporter remains responsible for the accuracy of any reported information, even after assurance is completed.

4 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

5 NSW Greenhouse Gas Reduction Scheme (GGAS): http://www.greenhousegas.nsw.gov.au

6 Office of the Renewable Energy Regulator: http://www.orer.gov.au/index.html

7 United Nations Framework Convention on Climate Change, Decision 17/CP.7, modalities and procedures for a clean development mechanism as defined in Article 12 of the Kyoto Protocol.

8 New Zealand Climate Change (Emissions Trading and Renewable Preference) Bill.

9 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

6. Linking the scheme to international markets

The Government is designing the Carbon Pollution Reduction Scheme so that it can be linked with other international schemes. Linking involves importing units from other schemes and/or exporting units from Australia. Linking has implications for the operation of the Australian Carbon Pollution Reduction Scheme and, in particular, the domestic price of carbon and the overall cost of the scheme.

An effective global carbon market will play a key role in developing effective international solutions to climate change by fostering least cost global abatement. Contributing to a robust international carbon market should therefore be seen as a strategic priority for Australia.

As noted in Chapter 1, the Government has decided that the scheme should enable international linkages. The Government is also seeking to ensure linking arrangements suit Australian economic conditions.

An international carbon market already exists under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol), and some countries have developed, or are developing, domestic emissions trading schemes.[1] These factors create linking options for the Australian scheme. Opportunities for linking are likely to increase substantially over time, as more countries take on binding emissions constraints and seek to use domestic emissions trading schemes to achieve their emissions targets at least cost. Growth in international carbon markets presents opportunities for Australia by broadening the abatement opportunities for liable parties and by extending the market for Australia's own abatement. However, participation in the international carbon market also entails risks.

Linking involves importing units from other schemes and/or exporting units from Australia. The Government will need to make choices about the sorts of units that could be imported or exported. Several types of units could be considered. They include the internationally recognised units created under the Kyoto Protocol (Kyoto units) and units created under different domestic emissions trading schemes. There are pros and cons to including these units in Australia's scheme.

Linking will have important implications for the operation of the Australian scheme, in particular for the price of Australian carbon pollution permits and the overall cost of the scheme. With unrestricted linking, the price of an Australian permit will be set by international carbon markets. Currently, international carbon markets are immature but evolving rapidly. Australia, being a relatively small emitter, is likely to be a price taker; that is, Australia will have little impact on world prices for carbon. A key consideration for Australia is how quickly it wants international demand and supply conditions to determine the domestic price, as an alternative to it being determined primarily by domestic demand and supply conditions.

This chapter assesses various options for linking the Australian scheme internationally, and considers which of the options are likely to be consistent with the scheme's overall objective. As the international environment continues to evolve (including in relation to the depth and robustness of the international carbon market), judgments about which linking choices best promote the objective are likely to change over time.

- Section 6.1 of this chapter outlines the implications of the scheme's objective for international linking.
- Section 6.2 sets out a framework for categorising different types of links.
- Section 6.3 discusses the Kyoto Protocol and implications for linking.
- Section 6.4 discusses whether Australian carbon pollution permits should be separate from Australia's Kyoto units.
- Section 6.5 assesses the options for accepting Kyoto units for compliance in the Australian scheme.
- Section 6.6 considers the use of non-Kyoto units in the Australian scheme.
- Section 6.7 assesses the options for the sale and transfer of abatement to international markets.
- Section 6.8 examines ways of providing clarity about linking rules.
- Section 6.9 considers options for the review of linking arrangements.

6.1 The scheme objective and its implications for linking policy

As discussed in Chapter 1, the proposed objective of the scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms.

An effective global market (with a credible global constraint on emissions) would reduce global and Australian abatement costs by ensuring that the cheapest abatement opportunities are pursued first, regardless of where they occur. In a world with an effective global market, for Australia to achieve its emissions reduction targets solely through domestic abatement would be more costly and would deliver no additional environmental gain. A 'least cost' approach would draw on real abatement opportunities wherever they arose throughout the world.

For these reasons, Australia has consistently advocated that international trade in emissions units would promote a more efficient global response to climate change, as long as any units purchased offshore represent real abatement.

Decisions on linking should also be consistent with Australia's international climate change objective of encouraging an effective global response to climate change, with economy-wide emissions reduction targets for advanced economies and specific commitments to action by others.

The Government's preferred approach, therefore, is that the emissions trading scheme be designed so that it can link with international markets and schemes, with a preference for open trade within an effective global emissions constraint.

An implication of this position is that national targets and caps for the scheme would be interpreted as reductions in net emissions. That is, 'net of trade' - abatement counted against the target would comprise both reductions in emissions in Australia and any abatement purchased overseas. Specifically, the Government's national target of reducing Australia's emissions by 60 per cent below 2000 levels by 2050 will be interpreted in net terms – that is, imported units would be counted towards our national target, while exported units would not. Similarly, medium-term targets (when announced) would also be interpreted as net targets.

6.1 Preferred position

The scheme would be designed so that it can link with international markets and schemes, with a preference for open trade within an effective global emissions constraint.

All targets for the scheme, as well as the commitment to reduce national emissions by 60 per cent below 2000 levels by 2050, will be defined in terms of net national emissions-that is, imported units would be counted towards our national target, and exported units would be excluded from the national target.

Any restrictions placed on linking would be to ensure:

- the stability and ongoing credibility of the scheme
- the environmental integrity and effectiveness of the scheme
- the scheme's consistency with international objectives and obligations.

6.2 Types of links

To link with other international schemes, the Australian Carbon Pollution Reduction Scheme would need to accept some forms of international units for compliance or allow for the transfer of its own units outside Australia. Before considering detailed options for linking, it is helpful to consider a framework for categorising different types of links.

In broad terms, links with other schemes can be described as either:

- *direct*, where units from scheme A can be used for compliance purposes in scheme B (for example, if Australia accepted units from the European Union Emissions Trading Scheme as valid compliance units in the Australian scheme); or
- *indirect*, where schemes A and B have no direct links but both accept units from scheme C, creating an indirect pricing link between them (for example, if both the Australian scheme and the European scheme recognised units created under the Kyoto Protocol).

In addition, links can be either:

- *unilateral* (one way), where units from system A can be used in system B, but not vice versa; or
- *bilateral* (two way), where governments responsible for schemes A and B agree to accept units from each other's schemes.

More complete forms of direct bilateral linking would include mutual recognition of units and full harmonisation of scheme design. For example, the European Union has established a harmonised scheme across member states, with consistent scheme design and a common unit.[2]

Within these broad types of linking arrangements, the Government must make further choices about:

- the types of international units that might be accepted for compliance in Australia
- whether any restrictions should apply to how many international units could be accepted for compliance in Australia
- whether Australian Kyoto units could be transferred outside Australia and, if so, how many.

6.3 Implications of the Kyoto Protocol for linking

The Government's first official act was to ratify the Kyoto Protocol. The protocol establishes a framework for international emissions trading, and is the logical starting point for considering Australia's linking options. This section describes the Kyoto Protocol trading framework, which provides the simplest near-term linking opportunities for Australia.

The Kyoto Protocol establishes quantified emissions targets for industrialised countries and countries with economies in transition ('Annex I parties'). The targets take the form of an absolute emission cap for each party for the 2008–12 period (the 'first commitment period'). Under this system, each party must retire an amount of Kyoto units equal to its target (expressed as a percentage of 1990 emissions) multiplied by five (for the first five-year commitment period). Australia's target under the Kyoto Protocol is to limit greenhouse gas emissions to 108 per cent of 1990 emissions in the first commitment period.

The Kyoto Protocol also provides a framework for parties to acquire Kyoto units from other countries and count them towards their emissions targets via three 'flexibility mechanisms': emissions trading among countries, and two project-based mechanisms, the 'clean development mechanism' and 'joint implementation' (see Box 6.1). The units that may be transferred, each one of which is equal to one tonne of carbon dioxide equivalent (CO_2-e), are:

- an assigned amount unit (AAU) issued by an Annex I party on the basis of its assigned amount (pursuant to Articles 3.7 and 3.8 of the Kyoto Protocol) (for example, Australia is allocated AAUs equal to 108 per cent of 1990 emissions)
- a removal unit (RMU) issued by an Annex I party on the basis of land use, land-use change and forestry activities (under Articles 3.3 and 3.4 of the Kyoto Protocol)
- an emission reduction unit (ERU) generated by a joint implementation project under Article 6 of the Kyoto Protocol
- a certified emission reduction (CER) generated from a clean development mechanism project under Article 12 of the Kyoto Protocol.

All of these units are eligible compliance units under the Kyoto Protocol; that is, each can be used to offset one tonne of CO_2-e from any party's emissions. The Kyoto Protocol's registry system (the international transaction log) tracks and records transfers of units. The international transaction log ensures secure transfer of units between national registries, with no double counting between countries.

Box 6.1
Kyoto Protocol's flexibility mechanisms

Emissions trading

Article 17 of the Kyoto Protocol allows for Annex I parties to participate in emissions trading. Parties may use tradeable Kyoto units to fulfil their commitments.

Clean development mechanism

The clean development mechanism provides for parties with an obligation (Annex I parties) to implement emissions reduction projects in developing countries to receive a certified emission reduction (CER). In turn, projects under the clean development mechanism assist the host parties to achieve sustainable development and contribute to the ultimate objective of the United Nations Framework Convention on Climate Change.

Unlike other types of clean development mechanism projects, reductions arising from afforestation or reforestation activities receive either temporary certified emission reductions (tCERs) or long-term certified emission reductions (lCERs). These units have limited life – less than two commitment periods for tCERs and between 20 and 60 years for lCERs.

Joint implementation

Joint implementation provides for an Annex I party (with a commitment inscribed in Annex B of the Kyoto Protocol) to implement projects (emission-reducing projects or projects that enhance carbon sinks) in the territory of another Annex I party and to count the resulting emission reduction units (ERUs) towards meeting its own Kyoto target.

To issue ERUs, the host country (the country in which the project occurs) must cancel an equivalent number of assigned amount units (AAUs) from its national registry. The reduction in AAUs is matched by a reduction in its national emissions inventory. Joint implementation is an indirect way of exporting AAUs.

A party can verify emissions reductions from a joint implementation project in two ways. It can verify reductions from the project using its own procedures and issue the appropriate quantity of ERUs, assuming it has satisfied the eligibility criteria. This simplified procedure is commonly referred to as the 'Track 1' procedure. Alternatively, it can use the 'Track 2' procedure to verify reductions, which means the verification occurs independently through specified verification procedures under the Joint Implementation Supervisory Committee.[3]

A range of requirements and restrictions curtail the use of the Kyoto Protocol flexibility mechanisms (described in Box 6.2).

First, a party must satisfy the specified eligibility requirements to participate in each of the mechanisms. Also, in order to address the concern that Annex I parties could oversell units and not be able to meet their own emissions targets, each party is required to hold a minimum level of Kyoto units in its national registry. This is called the 'commitment period reserve'.

The Kyoto Protocol also includes a requirement that parties' use of the flexibility mechanisms be supplemental to their domestic actions. This is commonly referred to as the 'supplementarity principle'. In the negotiations, Parties agreed not to place quantified limits on the use of the flexibility mechanisms and that 'supplementarity' should be interpreted at the country level.

The Kyoto Protocol also establishes the carry-over provisions for Kyoto units. Units that are not used for compliance in the first commitment period can be carried over (or banked) for use in the subsequent commitment period. However, there are restrictions on the carry-over of some types of Kyoto units.

Box 6.2
Requirements and restrictions imposed by the Kyoto Framework

Eligibility requirements to participate in the flexibility mechanisms

In order for parties to be able to participate in the flexibility mechanisms, they must have:

- ratified the Kyoto Protocol
- calculated and recorded their assigned amount in terms of tonnes of CO_2-e
- a national system for estimating emissions and removals of greenhouse gases within their territory (the 'inventory')
- a national registry to record and track the creation and movement of ERUs, CERs, AAUs and RMUs and must annually report such information to the Secretariat of the United Nations Framework Convention on Climate Change
- reported information on emissions and removals to the Secretariat annually
- submitted supplementary information in accordance with the Kyoto Protocol
- established a commitment period reserve.[4]

Box 6.2
Requirements and restrictions imposed by the Kyoto Framework (continued)

Commitment period reserve

In order to address the concern that Annex I parties could oversell units and subsequently be unable to meet their own emissions targets, each party is required to hold a minimum level of Kyoto units in its national registry. This is called the 'commitment period reserve'. The reserve is calculated as the lower of the following:

- 90 per cent of the party's assigned amount, as defined in Articles 3.7 and 3.8 of the protocol—this calculation is likely to be relevant to Annex I parties that prove, at the end of the commitment period, to be 'net buyers' of units under the mechanisms
- the level of national emissions indicated in the party's most recent emissions inventory (multiplied by five, for the five years of the commitment period)—this calculation is likely to be relevant to Annex I parties that prove, at the end of the commitment period, to be 'net sellers' of units under the mechanisms.

Supplementarity principle

The supplementarity principle is referred to in three Articles of the Kyoto Protocol: Articles 6 and 17 (with regard to trading), and Article 12 (with regard to the clean development mechanism).

Article 6.1 states that 'The acquisition of emission reduction units shall be supplemental to domestic actions for the purposes of meeting commitments under Article 3'. Article 17 states that '… any such trading shall be supplemental to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments under that article'. Article 12.3.b states that 'Parties included in Annex I may use the certified emission reductions accruing from such project activities to contribute to compliance with part of their quantified emission limitation and reduction commitments under Article 3'. Further it was decided (Decision 2/CMP.1) '…that the use of the mechanisms shall be supplemental to domestic action and that domestic action shall thus constitute a significant element of the effort made by each party included in Annex I to meet its quantified emission limitation and reduction commitments under Article 3 paragraph 1'.

Parties agreed subsequently not to place quantified limits on the use of the flexibility mechanisms and that 'supplementarity' should be interpreted at the country level. The Government's position is that this approach should be maintained as it helps ensure that parties can continue to reduce emissions at least cost.

Box 6.2
Requirements and restrictions imposed by the Kyoto Framework (continued)

Carry-over provisions

The Kyoto framework establishes the following carry-over (banking) provisions for Kyoto units that are not used for compliance in the first commitment period:

- Assigned amount units held in the national registry can be banked.
- Certified emission reductions held in the national registry can be banked up to a maximum of 2.5 per cent of the assigned amount of the Party
- Emission reduction units held in the national registry can be banked up to a maximum of 2.5 per cent of the assigned amount of the Party
- Removal units cannot be carried over to the subsequent commitment period.[5]

6.4 Domestic compliance units and the Kyoto Protocol

Having ratified the Kyoto Protocol, the Government must decide whether the units of trade created under the Australian Carbon Pollution Reduction Scheme will be Kyoto units, or whether to create separate Australian permit (or Australian emissions trading units).

The Carbon Pollution Reduction Scheme will be the primary means by which the Government will seek to meet Australia's Kyoto target. As a result, there will need to be a relationship between Australian Kyoto units (AAUs and RMUs), domestic emissions and the scheme. There are two possible approaches to achieving this:

- the Government could issue Australia's Kyoto units to liable entities within the Australian scheme, making them the units of trade and compliance in the domestic scheme
- a distinct domestic unit (or permit) could be created for the scheme (as outlined in Chapter 3).

The disadvantage of the first approach is that the scheme would be subject to Kyoto Protocol rules on unit issuance and banking, as well as the general uncertainty surrounding the nature of future international trading systems beyond 2012. As noted in Chapter 3, uncertainty over the rights associated with holding an emissions unit or permit can adversely affect the efficient operation of the market

The creation of Australian carbon pollution permits, which are distinct from Australia's Kyoto units, would enable the Government to control the flow of Kyoto units into and out of the scheme, provide greater assurance of the integrity of the scheme, and better allow for the management of international obligations.

Creating a separate emissions unit for compliance purposes in the scheme, backed by Kyoto units at the national level, is consistent with the approach taken by the European Union[6] and New Zealand.[7]

6.2 Preferred position

A carbon pollution permit (which would be referred to in the legislation as an Australian emissions unit) would be created for the scheme, and it would be distinct from Australia's international (Kyoto Protocol) units.

6.5 Accepting international Kyoto units in the Australian scheme

The Australian Carbon Pollution Reduction Scheme could allow liable parties to surrender international Kyoto units to meet the compliance purposes of the scheme. The Government must decide whether to allow the surrender of such units and, if so, whether to impose any restrictions on the number and type of Kyoto units that could be surrendered.

Using Kyoto units to meet compliance obligations in the Australian scheme would create a direct link with the Kyoto Protocol flexibility mechanisms. It would also create an indirect link with any scheme that also accepts these units (see Section 6.2), including for example, the European Union and New Zealand emissions trading schemes and a number of regional schemes in the United States, all of which accept or propose to accept Kyoto units for compliance. Such indirect links are a simpler way of linking with those schemes than is a direct link and, in the short term, entail the least implementation risk.

In order to use a Kyoto unit for compliance in the scheme, an entity would need to acquire a Kyoto unit from the international market and transfer it into an account in the Australian national registry (see Appendix C).

Consistent with the environmental integrity criterion (one of the eight assessment criteria outlined in Chapter 1), as long as accepting a Kyoto unit into the Australian scheme means that one less tonne of greenhouse gases is emitted elsewhere in the world, there need be no restrictions on their use. The use of Kyoto units in the scheme would be consistent with Australia's Kyoto obligation.

Recognising Kyoto units for compliance purposes in the domestic scheme increases the abatement options available to liable entities. They would be likely to purchase Kyoto units rather than pursue abatement domestically if the international carbon price is lower than the domestic cost of abatement. Allowing Kyoto units to be used is a cost-effective way of meeting Australia's national targets while encouraging the development of global carbon markets.

Accepting international Kyoto units also acts as a useful 'safety valve' by ensuring Australian prices do not significantly exceed international prices

6.3 Preferred position

Subject to restrictions, the scheme would link internationally via the Kyoto Protocol's flexibility mechanisms in the early years of operation.

6.5.1 Quantitative restrictions

In the longer term, the Government could consider unrestricted linking. However, at the outset the critical issue is how links should be formed in the early stages of the scheme.

The Government has three options when considering the number of Kyoto units that the scheme could initially accept: none, an unlimited number, or a limited number.

Proposals for the acceptance of Kyoto units in the Australian scheme previously put forward by the Garnaut Climate Change Review[8], the Task Group on Emissions Trading (TGET)[9] and the National Emissions Trading Taskforce(NETT)[10] are set out in Box 6.3. The European scheme places quantitative restrictions on the use of Kyoto units for compliance in the scheme, whereas it is proposed that the New Zealand scheme would not impose quantitative restrictions on the use of Kyoto units for compliance (Box 6.4).

Box 6.3
Other proposals for accepting Kyoto units in the Australian scheme

The Garnaut Climate Change Review argued that '*opportunities for international linking of the Australian scheme should be sought in a judicious and calibrated manner*' [11]. The Review highlighted the benefits of linking in reducing mitigation costs and price volatility, providing financial incentives for developing countries to take on commitments, making it easier to set and adhere to national emissions targets and to provide equal treatment or a level playing field for trade-exposed industries, through convergence of carbon pricing across countries. It indicated that linking to those countries that have a flawed domestic mitigation system will result in the importation of those flaws. The review also acknowledged that linking also has some risks for Australia and might lead to price volatility for example due to external policy change. The Review argued that a limit on international purchases might be a useful precaution.[12]

The TGET recommended that the scheme accept a broad range of international credits.[13]

The NETT proposed that quantitative limits apply to the use of international credits.[14]

Box 6.4
Quantitative restrictions in other emissions trading schemes

The European Union Emissions Trading Scheme has quantitative restrictions on the number of Kyoto units that member countries and liable entities in that scheme can use for compliance.[15] The restrictions enable member countries to satisfy the principle of supplementarity under the Kyoto Protocol. The supplementary obligations comprise both government purchase as well as private sector use of ERUs and CERs. For the current phase (2008–12), the actual restrictions differ depending on the member state.

Restrictions are based on the level of effort the member state is required to undertake. To meet their targets, member states are allowed to use up to 50 per cent of their effort in Kyoto units from other countries. Effort is calculated as the largest of the difference between:

- base year emissions and emissions allowed under the Kyoto target
- greenhouse gas emissions in 2005 and emissions allowed under the Kyoto target
- the difference between projected emissions in 2010 and the emissions allowed under the Kyoto target.

Entities within the member state can use up to this amount. However, where member states intend purchasing Kyoto units for other uses (such as to account for emissions from uncovered sources), those units are deducted from the total number that liable entities can use. Where assessment in accordance with these approaches would result in entities only being able to use less than 10 per cent, entities are allowed to use up to 10 per cent instead.

In practical terms consistency with European supplementary obligations is based on the following formulae:

A = base year emissions – emissions allowed under Kyoto target

B = greenhouse gas emissions in 2004 – emissions allowed under Kyoto target

C = projected emissions in 2010 – emissions allowed under Kyoto target

D = 50 per cent of Max (A, B, C) – annual average government purchase of Kyoto units

Maximum allowed limit (in per cent) = (D / annual average cap) or 10 per cent.[16]

The New Zealand Government does not propose to impose any quantitative restrictions on the use of eligible Kyoto units for compliance in the New Zealand scheme.[17]

The chief advantage of not limiting the number of Kyoto units that can be used for compliance is that domestic compliance costs would be minimised—liable entities would purchase such units only if the units were less expensive than domestic compliance options. Imposing limits on access to international units means that the domestic price for emissions units could deviate from the international carbon price. Access to Kyoto units would also inject greater liquidity into the Australian market.

However, there are also potential disadvantages associated with access to an unlimited number of Kyoto units:

- As noted in Section 6.3, the Kyoto Protocol requires that the use of flexibility mechanisms be supplemental to domestic action, although 'supplemental' has not been defined.
- To minimise implementation risks, the Government may wish to shield the domestic market from potential price uncertainty in international markets, at least in the early stages of the scheme. International carbon prices could fluctuate largely as a result of political decisions by other governments, and Australia would have no control over those decisions. In particular, the current significant uncertainty about future international arrangements could lead to significant price uncertainty and volatility. The uncertainty about future international arrangements may not be resolved fully before the commencement of the scheme. This raises particular concern over price uncertainties at the commencement of the scheme. Such uncertainty about future international arrangements, which has implications for the stability and predictability of the global price, could be ameliorated as the domestic and international markets mature and the post-2012 international architecture becomes clearer. The scheme could manage the upside price risk from linking to a volatile international market by restricting the sale of units from Australia (see Section 6.7). This would mean that the global price volatility would primarily be a concern for down side price risk for the Australian scheme. It should also be noted that regardless of whether the scheme links internationally the domestic price could also be volatile.
- It may be desirable to have a higher degree of domestic abatement to ensure the ongoing credibility and acceptability of the scheme. Especially in the early years, the community might reduce its support for the scheme if it perceives it to be merely driving an outflow of funds to other countries while requiring little domestic action. Community acceptance of the scheme is important for its ongoing survival, which affects its environmental integrity. If investors perceive that the scheme might only be short-lived, then its efficiency and liquidity will also be adversely affected, since investors would not take long-run price signals about the price of carbon into account. On the other hand community support for the scheme may also be adversely affected if they face significantly higher prices as a result of a higher carbon price. As discussed earlier, linking internationally could help to ameliorate this by providing greater access to least cost abatement. A careful balancing of these factors is required.

The Government considers that the immediate priority is to minimise implementation risk. The preferred approach would be to impose quantitative restrictions on the use of Kyoto units, at least in the initial years of the scheme. Such an approach would manage risk while gaining valuable experience in engaging with international carbon markets.

Limits would be most simply defined as a maximum allowable percentage of an entity's obligation that could be met through the use of Kyoto units. Decisions on initial quantitative limits would be made at the end of 2008, in the context of the white paper (see Section 6.8).

There is a distinction between limits on the number of Kyoto units that can be surrendered for scheme compliance, and the ability for Australian entities to generate, purchase or trade in Kyoto units. Quantitative limits on the use of Kyoto units for compliance do not limit an entity's ability to trade in Kyoto units. Account holders in the Australian national registry can hold as many Kyoto units as they choose and sell them on the domestic market or sell them overseas to other Kyoto parties. However, entities' willingness to purchase and hold Kyoto units will be affected by the fact that not all Kyoto units are fully bankable. Restrictions would apply to the carry-over of certain Kyoto units held in the Australian national registry at the time of the carry-over (see Box 6.2).

6.4 Preferred position

The Government believes the short-term priority is to minimise implementation risk while the scheme is being established. This includes promoting price stability and predictability in the early years of the scheme.

Liable entities would be able to meet their obligations by using eligible Kyoto units for compliance in the scheme, limited to a maximum percentage of each entity's obligation (for the period 2010–11 to 2012–13).

6.5.2 Other considerations

The Government will need to decide whether to place restrictions on the types of international units that can be used for compliance in the scheme.

The following sections set out the arguments for and against accepting each of the different types of Kyoto units in the scheme.

Assigned amount units

The Government will need to decide if assigned amount units (AAUs) will be accepted for compliance purposes.

AAUs are the primary compliance units under the Kyoto Protocol, and are issued to countries in line with their agreed national emissions targets.

There are three basic options for the treatment of AAUs in the scheme:

- recognise AAUs for compliance purposes
- decline to recognise AAUs for compliance purposes
- recognise AAUs from some sources but not others.

Allowing AAUs to be used for compliance in the Australian scheme has a number of benefits:

- AAUs are likely to offer a low-cost compliance option for liable entities, promoting a cost-effective way for the scheme to help meet Australia's emissions targets.
- Trade in AAUs represents trade with countries that have agreed to accept emissions constraints. Encouraging acceptance of such constraints is consistent with Australia's international objectives.

All AAUs are legitimate compliance units under the Kyoto Protocol. It is reasonable to assume that they will be used at some point by a party within the Kyoto framework. Using an AAU in Australia means that it cannot be used by another party. Therefore, its use in Australia will have no impact on aggregate global emissions.

Some concerns have been raised about the environmental credibility of some AAUs, specifically those that relate to so-called 'hot air' or surplus AAUs allocated to those countries whose economies have contracted since 1990. Those concerns centre on the argument that use of these AAUs in Australia would not necessarily mean that emissions would be reduced elsewhere.

In light of these concerns, the New Zealand Parliament's Finance and Expenditure Committee has recommended that the New Zealand scheme accept AAUs into its scheme. However, acceptance is subject to a prohibition on the surrender of imported AAUs issued during the first commitment period for compliance purposes under New Zealand's emissions trading scheme post-2012.[18] While the European Union's scheme restricts the importation of surplus AAUs, member states (including the Eastern European countries that have been granted entry to the European Union) can trade in AAUs outside the scheme and can use those units to comply with their Kyoto obligations.[19]

The Garnaut Review acknowledges the concerns that have been raised in regards to the use of surplus AAUs, but it also notes that future treaties would not be credible if countries' targets are agreed to at the time of signature, but those countries are not allowed to reap the financial rewards if they exceed them. It suggests that pre-2012 purchase of AAUs could be restricted to government, and not open to entities. [20]

One option that has been raised is to allow so-called 'greened' AAUs to be accepted in the Australian scheme. Some of the countries that have surplus AAUs have developed 'green investment schemes' where the proceeds of sales of AAUs are directed to accredited environmental projects such as those targeting energy efficiency, encouraging fuel switching or slowing the rate of deforestation. However, these green investment schemes are likely to be less stringent in their requirements than those of the joint implementation mechanism under the Kyoto Protocol.

Given the current uncertainty around future arrangements, it is not clear how the supply of AAUs will develop over the first commitment period. The volume of surplus AAUs is potentially large compared to the expected compliance shortfall for Kyoto parties in the first commitment period. The World Bank estimates that the compliance shortfall for Kyoto parties in the first commitment period could be 3.3 billion tonnes CO_2-e, after taking account of domestic sinks. AAUs have the potential to deliver some 7.1 billion

tonnes CO_2-e.[21] This potential oversupply would have implications for the global price. If Australia recognised AAUs for compliance in the scheme this price uncertainty could have implications for scheme stability. However, those countries with surplus AAUs could be expected to act strategically in deciding whether to sell their surplus AAUs and could well decide to bank surplus units for use in future commitment periods.

The Government considers that the Australian scheme should not recognise AAUs for compliance in the first commitment period given the potential impacts on the stability and credibility of the scheme. In putting forward this position it is important to note that Australia has different circumstances to many other Annex I Kyoto Parties in that it is establishing its scheme while it is projected to meet its Kyoto target. This position would be reviewed in the light of international developments.

6.5 Preferred position

No assigned amount units would be accepted for compliance in the scheme (for the period 2010–11 to 2012–13). This position would be reviewed in the light of international developments.

Emissions reduction units

The Government will need to decide if emission reduction units (ERUs) generated by joint implementation projects in other Annex I countries will be recognised for compliance purposes in the Australian scheme.

As with AAUs, recognition of ERUs would offer the following benefits:

- ERUs are likely to offer a low-cost compliance option for liable entities, promoting a cost-effective way for the scheme to help meet Australia's emissions targets.
- Trade in ERUs represents trade within the aggregate emissions constraint imposed by the Kyoto Protocol and could be considered more effective than trade in international offset credits from uncapped sources.

The Kyoto Protocol's joint implementation mechanism includes arrangements for ensuring the environmental credibility of emissions reduction projects. Under Track 1 of the joint implementation mechanism (see Box 6.1), emissions reductions are verified by the host country, which has an incentive to ensure that units are issued only for real reductions, as host countries also have Kyoto targets.

Under Track 2 of the joint implementation mechanism (see Box 6.1), ERUs are verified using robust and internationally recognised methodologies and processes employed by the Joint Implementation Supervisory Committee.

The Government considers that the scheme should recognise ERUs.

6.6 Preferred position

Emission reduction units created under the Kyoto Protocol's joint implementation mechanism would be recognised for compliance purposes in the scheme (for the period 2010–11 to 2012–13).

Removal units

Removal units (RMUs) are units issued by another Kyoto party on the basis of land use, land-use change and forestry activities under Articles 3.3 and 3.4 of the Kyoto Protocol. Few countries are likely to be in a position to generate RMUs, so the potential for trade in RMUs is likely to be limited. No concerns have been raised about the use of RMUs, and the Government considers that they should be recognised as compliance units in Australia's scheme.

6.7 Preferred position

Removal units would be recognised for compliance purposes in the scheme (for the period 2010–11 to 2012–13).

Certified emission reductions

The Government will need to decide if it will recognise CERs resulting from projects in developing countries under the Kyoto Protocol clean development mechanism and, if so, whether any restrictions on CERs should apply.

The clean development mechanism is designed to provide emissions reductions that can be used by Kyoto parties with an obligation to meet their commitments under the protocol as well as support sustainable development in the host country. It is an offset mechanism that generates CERs based on differences between an estimated baseline (expected 'business as usual' emissions) and actual emissions. The mechanism does not lead to additional global abatement (the use of CERs in Australia allows for an increase in emissions, but this is offset by abatement from the clean development project), but potentially lowers the cost for a given constraint.

The clean development mechanism has induced significant abatement activities in developing countries and provides an important source of low cost abatement opportunities. Trade in CERs is an important component of the current international market, adding to overall liquidity.

The clean development mechanism is an important transition mechanism that engages developing countries in mitigation projects until they are able to take on binding commitments. In addition, supporting the mechanism by recognising CERs for compliance in the Australian scheme is considered consistent with the international objectives criterion.

However, some have raised concerns about the environmental credibility of the clean development mechanism, as it entails no limit on emissions in developing countries.

Further, although the mechanism uses rigorous verification procedures, any assessment of whether abatement is truly 'additional' entails a significant degree of judgment.[22]

Specific concerns have been raised about CERs from certain types of projects. As a result of concerns about the potential for nuclear projects to generate CERs, the Marrakech Accords specifically prohibit the use of abatement arising from nuclear energy facilities. Some countries have restricted the use of some CERs due to wider environmental and social impacts arising from some types of clean development projects (for example, the European Union scheme does not allow the use of CERs from large-scale hydropower projects).[23] However, since these impacts do not relate to the greenhouse benefits that arise from such projects, the emissions trading scheme is unlikely to be the most effective means to address these impacts.

Under the current rules, CERs generated from afforestation or reforestation activities are different from other types of Kyoto units, as they have only a limited life — less than two commitment periods for tCERS (temporary CERS) and between 20 and 60 years for lCERS (long-term CERs) — before they need to be replaced. If these CERs were recognised in Australia's scheme, the Government would need to replace them with other units when they expired. Because of their limited life, the European Union and New Zealand schemes do not allow these CERs to be used.

The Government considers the clean development mechanism to be an important transitional mechanism, and believes that CERs should be recognised for compliance purposes in the scheme. Because of the additional risk and liability inherent in accepting long-term and temporary CERs from afforestation and reforestation activities, it considers that those units should not be recognised for compliance purposes.

The international community is currently considering a range of proposals to reform the clean development mechanism in an effort to ensure it remains an effective mechanism in any future agreement.

6.8 Preferred position

Certified emission reductions generated by the Kyoto Protocol clean development mechanism would be accepted (for the period 2010–11 to 2012–13), with the exception of those that have associated contingent obligations and high administrative costs: currently, temporary certified emission reductions and long-term certified emission reductions from forestry-based projects.

6.5.3 Using certified emissions reductions and emissions reduction units beyond 2012–13

The Government needs to consider the rules for accepting Kyoto units beyond 2012–13. The Kyoto Framework imposes limits on the extent to which some units can be banked into the second commitment period (see Section 6.3). The Kyoto Framework does not allow for RMUs generated in the first commitment period to be banked into the second commitment period, therefore RMUs generated in the first commitment period would not be accepted for compliance in the scheme beyond 2012–13. The Kyoto Framework does allow for CERs and ERUs to be banked to a limited extent. It is not yet

known however, whether the current project-based mechanisms will exist in a future commitment period.

The Government's options for recognising CERs and ERUs for compliance purposes in the scheme beyond 2012–13 are to:

- allow CERs and ERUs created before the end of the first commitment period of the Kyoto Protocol to be carried over and used to acquit post 2012–13 obligations
- allow units generated by abatement occurring after the end of the first commitment period by projects that were operational and generating CERs or ERUs in the first commitment period
- allow units generated by abatement occurring after the end of the first commitment period by projects that were not operational during the first commitment period, but that satisfy the eligibility requirements of either the clean development mechanism or the joint implementation mechanism established for the first commitment period.

The main arguments for allowing the use of CERs and ERUs beyond the initial years of the scheme is that it would allow for more certainty for project investors and liable entities.

However, because of uncertainty about the future international architecture, there is a risk those units might not be counted towards Australia's future international commitments.

The Kyoto framework allows CERs and ERUs generated in the first commitment period to be carried over to the second commitment period. However, that cannot happen until 2015 (after the 'true-up' period under the protocol) and is subject to limitations (only an amount equivalent to 2.5 per cent of Australia's assigned amount for each type of unit can be carried over). If CERs and ERUs created before the end of the first commitment period are accepted for compliance in the scheme beyond 2012-13, the Government would need to manage this carry-over restriction (see Box 6.5).

Box 6.5
Managing the carry-over restriction of the Kyoto Protocol

The Kyoto framework allows for CERs and ERUs to be carried over into the next commitment period, with a limit on each of 2.5 per cent of Australia's assigned amount. Since the carry-over of ERUs and CERs is limited, the Government will need to manage the carry-over restrictions on these units. The options for managing the carry-over restrictions on CERs and ERUs include:

- the Government could decide to not allow for any carry-over of CERs or ERUs held in accounts in the Australian national registry other than the Government account. The Government would reserve the right to carry-over the full amount of the allowed CERs or ERUs and manage the restrictions directly

Box 6.5
Managing the carry-over restriction of the Kyoto Protocol (continued)

- the Government could allow for CERs and ERU held in the Australian national registry and created before the end of 2012 to be exchanged for Australian carbon pollution permits (which can be banked) at some time after 2012 and before the end of the Kyoto 'true-up' period (end of 2014). The Government would then surrender the CERs and ERUs to meet its Kyoto obligation, in place of an equal number of AAUs, which it would otherwise have had to surrender. The AAU would then be banked in place of the CER or ERU to back the Australian permits that are to be issued. The Kyoto Protocol imposes no quantitative limit on the number of AAUs that can be banked. From a private entity's perspective, this approach creates an option to eliminate the risks of holding CERs and ERUs and being subject to the quantitative limit on banking. From the Government's perspective, this approach reduces the risk that too many non-bankable units will be stored in its national registry. This approach would however have to be limited. It would not be possible for the Government to allow for the exchange of more CERs and ERUs than Australia's assigned amount (or emissions if total emissions are less).
- The Government could allow for the carry-over of CERs and ERUs held in any account in the national registry up to 2.5 per cent of Australia's assigned amount in aggregate. In the event that there are more CERs or ERUs held in the registry at the time of carry over the Government could use pre-specified rules to determine which units would be carried over. For example two possible rules that could be used are:
  - an application process that allowed for holders of CERs and ERUs to apply to have them carried over. Once the number of applications had reached the allowed threshold the Government would close applications. The rule would stipulate that once a CER or ERU had been approved for carry-over it must be carried over and would not be used or transferred outside of the registry until such time; or
  - to stipulate that each holder of CERs or ERUs would only be allowed to carry over a specified proportion of their units held at the time of carry over. For example, if the total number of CERs remaining in the national registry was equal to 5 per cent of the assigned amount, then 50 per cent of each holders units would be carried over to limit the total number carried over to the 2.5 per cent allowed.

To help the market better manage the risk associated with the carry-over restrictions, it would be helpful for the scheme regulator to regularly report the number of CERs and ERUs in the Australian national registry.

The Kyoto framework allows for the creation of CERs from 2013 onwards, so there would be little risk to the Government in recognising CERs in Australia's scheme. However, the rules and procedures governing the clean development mechanism may change for a second commitment period, so there is no guarantee that all the types of abatement projects recognised in the first commitment period will continue to be recognised in a future agreement.

The Kyoto framework does not allow for the creation of ERUs from 2013 unless new emissions targets have been agreed. However, if agreement on a new international framework is delayed, Australia could continue to recognise ERUs generated after 2013 from those projects approved during the first commitment period and to trade those units under bilateral and even multilateral agreements. The risk that the units would not be counted towards Australia's future international commitments is likely to be low, given that all parties will probably have an interest in providing certainty for existing projects under a future agreement. Phase III of the European Union Emissions Trading Scheme proposes to recognise abatement from such projects.[24]

Similarly, the scheme could recognise units for abatement generated by projects from 2013 onwards that were not operational during the first commitment period but would satisfy the eligibility requirements for clean development projects or joint implementation projects for the first commitment period. Such an approach would be necessary only if multilateral agreement on a post-2012 outcome is delayed.

Once an international framework is agreed, the units that count towards Australia's future international commitments can be determined.

Allowing entities in Australia's scheme to use units that are not internationally recognised will increase scheme costs. As Australia will still need to meet its international commitments, the Government would have to tighten the scheme cap (with other participants bearing the burden) or buy an equivalent number of complying international units.

6.9 Preferred position

Certified emission reductions and emission reduction units generated in the first Kyoto Protocol commitment period would be recognised for compliance in the scheme in 2012–13 and in subsequent years, in accordance with the rules set out in the protocol and any restrictions that apply to the use of international units set out in the Australian scheme.

Certified emission reductions generated through abatement from 2013 onwards by projects established in the first commitment period would be recognised for compliance in the scheme in 2012–13 and subsequent years, in accordance with the rules set out in the protocol and subject to any restrictions that apply to the use of international units set out in the Australian scheme.

6.6 Use of non-Kyoto units for compliance in the scheme

A key question is whether international emissions units that cannot be counted towards Australia's obligations under the Kyoto Protocol would be recognised for compliance purposes in the Australian scheme. Such units are referred to here as 'non-Kyoto' units.

Possible non-Kyoto units include those generated by schemes in non-Kyoto countries (such as those generated in the United States), voluntary market credits, and units from abatement not currently recognised in the current clean development mechanism rules (such as avoided deforestation). Units generated in domestic and regional schemes of Kyoto countries are also non-Kyoto units. To be consistent with the Kyoto Protocol, the transfer of units would need to be accompanied by a Kyoto unit.

To be consistent with the environmental integrity criterion for scheme design, it would be important that the scheme recognises only units from schemes that are robust and credible. For example, robust methodologies for estimating and crediting abatement from avoided deforestation have not yet been developed (although Australia's International Forest Carbon Initiative will help to develop such methodologies, with practical demonstration activities in Indonesia and possibly Papua New Guinea). In addition, Australia aims to have incentive-based market mechanisms for developing countries to reduce emissions from deforestation and forest degradation included in a future international response to climate change. However, until then, Australia will not prematurely recognise units from such activities in its Carbon Pollution Reduction Scheme.

The Garnaut Climate Change Review recommended pursuing linking arrangements with credible schemes or where there are important strategic benefits.[25] This implies acceptance of non-Kyoto units in certain circumstances. The TGET[26] recommended acceptance of a wide range of international offsets, whereas the NETT[27] recommended that only Kyoto units be accepted. Both of these latter approaches were developed prior to Australia's ratification of the Kyoto Protocol.

Allowing the use of robust non-Kyoto units for compliance would widen the field of available abatement options in the scheme and lower compliance costs. It could also strengthen cooperation on climate change with non-Kyoto parties and help to shape global solutions in areas where the international community has been slow in finding workable ways to promote some types of abatement through trading mechanisms.

However, allowing non-Kyoto units for compliance will increase the cost to Australia of meeting its international obligations, since those units will not count towards Australia's Kyoto target. If units that are not internationally recognised are allowed for compliance purposes in Australia's scheme, the Government may need to reduce the scheme cap or purchase additional complying international units to meet Australia's international obligations. Allowing non-Kyoto units would also likely be a barrier to any future efforts to develop linkages with other emissions trading schemes in countries that have ratified the Kyoto Protocol. More broadly, linking arrangements would need to ensure consistency with Australia's international climate change and trade obligations.

It is also likely that accepting non-Kyoto units would add to the administrative complexity of the scheme, as arrangements would be needed to ensure that units are environmentally credible and not double counted by inclusion in other domestic schemes.

For these reasons, the Government's preferred position is that non-Kyoto units should not be recognised for compliance purposes in the scheme in the period from 2010–11 to 2012–13.

However, the use in Australia's scheme of units that are not currently internationally recognised could be revisited once the shape of a post-2012 framework is clearer. It is possible that credible non-Kyoto units will be recognised in the post-2012 framework. All Kyoto parties are likely to have an interest in ensuring that the post-2012 framework recognises all credible forms of abatement. For example, the Phase III proposal for the European Union Emissions Trading Scheme (2013 to 2020) has provisions to link with credible schemes in any country or administrative entity.[28]

6.10 Preferred position

International non-Kyoto units would not be accepted for compliance in the scheme. This position would be reviewed for the post-2012–13 period in the light of future developments in international negotiations.

Australia would continue to support the development of robust internationally accepted methodologies for reductions from deforestation and forest degradation in developing countries, noting that these are currently not recognised under the clean development mechanism.

6.7 Sale and transfer of domestic abatement to international markets

Another key decision for the Government is whether the scheme will allow for the sale and transfer of domestic permits to international markets and, if so, whether this will be restricted in any way.

It would be extremely difficult to prevent the sale of Australian permits to parties in other countries. Other countries or voluntary schemes could decide unilaterally to recognise the retirement of Australian permits in Australia's scheme for the purpose of compliance under their own schemes. This is unlikely to be a significant issue, because such permits could not be counted towards other countries' international commitments unless they were accompanied by a transfer of an equivalent number of Kyoto units (see Section 6.3).

Given that the Kyoto Protocol allows parties to transfer Kyoto units, the Australian scheme could allow for the sale and transfer of domestic permits from Australia to other countries by either:

- allowing Australian permit holders to convert their domestic permits into Kyoto units for sale and transfer via the international transaction log to an account in another country's national registry (New Zealand proposes to use this process in its scheme)

or

- hosting joint implementation projects, which would involve the cancellation of an Australian AAU and the creation and potential export of an ERU.

The Garnaut Climate Change Review did not argue for any restrictions on the transfer of units outside Australia.[29] The TGET[30] and the NETT[31] did not directly address this question.

Transferring Australian permits to other countries would reduce the number of permits in Australia's scheme, increasing the Australian permit price and resulting in relatively more abatement occurring in Australia than would otherwise be the case. The capacity to sell and transfer domestic abatement to international markets would also create new markets for providers of domestic abatement. It would increase the inflow of foreign capital, providing a stimulus for domestic abatement activities and investment in low-emissions technologies, and contribute to reducing the costs of global mitigation and to increasing global liquidity. The ability to sell Australian permits into foreign markets is, therefore, generally desirable.

However, some short-term factors need to be taken into account, particularly in minimising implementation risk. Adding international demand to the domestic scheme has the potential to increase upward pressure on the domestic price of Australian permits. This poses risks to the stability of domestic prices and, as a consequence, compliance costs, during the period in which the scheme is being bedded down. Allowing for the sale and transfer of Australian permits could also add complexity to the scheme. Neither of these impacts are desirable while market participants are adjusting to the scheme's introduction.

Additionally, the Government would need to comply with the commitment period reserve of the Kyoto Protocol (see Box 6.2). That requirement would mean that the Government could not allow for the unlimited transfer of Australia's Kyoto units to international markets, and that the commitment period reserve would need to be managed (see Box 6.6).

Box 6.6
Managing the commitment period reserve

If Australia were to breach its commitment period reserve required under the Kyoto Protocol, the international transaction log would not allow for any further transfer out of the Australian registry until such time that the commitment period reserve was again met. That is, no further outbound transfers could occur until sufficient Kyoto units entered Australia's national registry to satisfy the commitment period reserve. With entities other than the Government transferring Kyoto units into and out of the Australian registry, the commitment period reserve will need to be actively managed by the Government. The Government could manage the commitment period reserve in a number of way, for example:

- By not allowing entities to convert an Australian permit into an AAU for the subsequent transfer to another country, the Government would retain control over the transfer of Australia's AAUs and would be able to directly manage the commitment period reserve.
- If the scheme were to allow for the conversion of an Australian permit into an AAU for the subsequent transfer to another country, the government could manage the commitment period reserve by establishing a gateway for all transfers of Kyoto units with a queuing system that would apply if the commitment period reserve was breached.
- An alternative approach if the scheme were to allow for the conversion of an Australian permit into an AAU for the subsequent transfer to another country, is to specify a set number of 'special' Australian permits that could be converted and transferred to another country. Only these units could be converted into an AAU for transfer to another country.

The proposed approach for the initial years of the scheme would be to prohibit the sale and transfer of Australia's AAUs outside Australia. However, further consideration would need to be given to the relative merits of the different approaches to managing the commitment period reserve if and when the scheme did allow for the sale and transfer of AAUs to other countries.

The Government places a priority on minimising implementation risk. Therefore, the preferred position is not to allow Australian permits to be converted into Kyoto units for sale and transfer outside Australia in the early years of the scheme. This position would be reviewed for the post 2012–13 period, as the Government recognises that the ability to sell Australian permits into international markets is desirable and should be a feature of longer term linking arrangements.

6.11 Preferred position

In order to facilitate a smooth start to the scheme and to minimise implementation risks, the Government would not allow Australian permits to be converted into Kyoto units for sale in and transfer to international markets in the early years of the scheme.

6.7.1 Hosting joint implementation projects in Australia

Joint implementation allows other Kyoto parties and private entities to undertake emission reduction projects in Australia. Hosting joint implementation projects here is an alternative mechanism for the sale and transfer of abatement to international markets. Hosting joint implementation projects in Australia does not affect Australian entities' ability to participate in such projects in other countries.

Joint implementation projects receive ERUs equivalent to the abatement generated in Australia by the projects. The ERUs can be used by other Kyoto parties to meet their obligations. To issue ERUs, Australia must cancel an equivalent number of its allocated AAUs. Although Australia is left with fewer AAUs, the reduction should be matched by a reduction in the Australian national emissions inventory as a result of the joint implementation project.

After the Australian scheme commences, joint implementation abatement projects should be undertaken only in sectors not covered by the scheme. This is because abatement within the scheme reduces the number of permits that entities need to surrender. If ERUs were also issued for abatement occurring within the scheme this would result in double counting.

The Government will need to decide if Australia will allow joint implementation projects in uncovered sectors. There is likely to be strong support from Australian companies that wish to participate in such projects. In addition, some current Australian projects may have been initiated on the assumption that they would be considered eligible joint implementation projects.

Decisions about hosting joint implementation projects in uncovered sectors are closely related to decisions about the coverage of the scheme and, in particular, the remaining scope for offsets (issues related to offsets are discussed in Chapter 2).

In summary:

- The Government's preferred position is that offsets, and therefore joint implementation projects, should be considered only where it is not possible to
  - cover a particular source of emissions
  - cost-effectively mitigate those emissions through alternative measures, to more efficiently and equitably spread the burden of abatement across the economy.
- The very broad sectoral coverage proposed for the scheme means that there is inherently less scope to pursue joint implementation projects in Australia.

- Allowing forests to 'opt in' to the scheme provides a similar but less administratively complex approach to crediting forest abatement than offsets or joint implementation projects. Given the proposed opt-in arrangement for reforestation activities, domestic offsets and joint implementation are not proposed for reforestation activities.
- Further, the Government's preferred position is that the scheme not include domestic offsets (and joint implementation) from agricultural emissions during the period before coverage of the agricultural sector's emissions.
- The Government's preferred position is to consider the scope for offsets and joint implementation from sources of emissions that cannot be covered by the scheme after a final decision on initial coverage in 2013.

A further decision for Government is whether it would consider hosting joint implementation projects in relation to abatement that occurs before the scheme begins (that is, from 2008 to 2010). Decisions about hosting those projects relate closely to decisions about crediting early action (see Chapter 12).

The scope for such joint implementation projects is very limited and would relate only to 'additional' abatement that occurred from 1 January 2008 (the beginning of the first commitment period of the Kyoto Protocol). Two factors would make passing an additionality test difficult. First, projects that went ahead without a commitment from the Government on joint implementation might not satisfy additionality requirements. Second, projects in sectors that will be subject to coverage in the near future might not be considered additional, if it was financially beneficial to prepare in advance of the Carbon Pollution Reduction Scheme.

Hosting joint implementation projects for abatement before the commencement of the scheme would require the design and implementation of administrative arrangements, which are likely to require considerable government and private resources. Given the limited scope for abatement before the commencement of the scheme, the Government considers that the potential benefits do not justify the additional administrative burden.

6.12 Preferred position

Australia would not host joint implementation projects in sectors that are covered by the scheme.

Decisions on joint implementation projects for uncovered activities would be aligned with decisions on domestic offsets.

The scheme would not include domestic offsets (and therefore joint implementation) from agricultural emissions in the period prior to coverage of that sector's emissions.

In 2013, the Government would consider the scope for offsets (and joint implementation) in sectors that cannot be included in the scheme.

Australia would not host joint implementation projects before the start of the scheme.

6.8 Providing clarity over linking rules

Given the importance of linking rules to market expectations about domestic carbon pricing, it is desirable for market participants to know:

- when final decisions will be made on linking rules for the start of the scheme
- how much notice, if any, would be given of changes to linking rules.

Linking rules are as important to market participants as decisions about the scheme cap. They are a key determinant of the domestic price. Increasing the number of international units that entities can use for compliance in the scheme would be like expanding the cap; conversely, decreasing the number would be like reducing the cap. Similar periods of market certainty should apply to both design elements.

When linking rules are set, it will be necessary to balance the need for market certainty (to help promote an economically efficient response) with the need for policy flexibility (to adapt restrictions as the scheme and international market mature). As with scheme caps, certainty about quantitative restrictions for longer periods, say 10 years, would provide longer term certainty to market participants and make it easier for them to assess investment proposals. However, the Government needs to retain flexibility over linking arrangements to ensure they are consistent with evolving international obligations and objectives.

The need to coordinate announcements about qualitative restrictions with announcements about future caps is perhaps not as strong for quantitative restrictions. This is because qualitative limits deal with international units that would otherwise be substitutes, and changing the rules about acceptance of one type of unit is less likely to fundamentally change domestic compliance costs. In the event that the credibility of a type of unit recognised for compliance in the scheme was compromised and the scheme continue to recognise it, the credibility of the Australian scheme could be significantly effected. The advantage of being able to change the rules quickly is that the integrity of the Australian scheme can be maintained if it ceases to accept the type of unit whose credibility had been compromised. The disadvantage of maintaining flexibility over qualitative limits is that entities that invested in good faith in such units would be disadvantaged if no reasonable notice of rule changes were given.

The Garnaut Review argued that while advanced notice of new links is warranted, it may be necessary to revoke a decision on the recognition of a unit for compliance if the quality of that unit was to deteriorate. [32]

The Government seeks stakeholder input on how much notice should be given before qualitative restrictions are changed, including in a situation in which the environmental integrity of a particular type of international unit has been compromised.

As discussed above, it is proposed that the conversion of Australian permits into Kyoto units for sale and transfer to other countries would not be allowed in the initial years of the scheme. However, this position would be reviewed for the post 2012–13 period, as the Government recognises that the ability to sell Australian permits into international markets is desirable and should be a feature of longer term linking arrangements. Where provisions are made for the sale and transfer of permits to other countries it would be desirable for the market to have clarity over these and any relevant restrictions.

6.13 Preferred position

The Government would provide the maximum feasible level of certainty about future linking arrangements, consistent with retaining enough flexibility to respond to changing international arrangements.

The Government would:

- at the end of 2008, in the context of the white paper, determine and announce the quantitative limits on the use of Kyoto units by liable entities for the period from 2010–11 to 2012–13, in conjunction with decisions on the national trajectory and scheme cap
- in early 2010 confirm quantitative limits that might apply to the use of Kyoto units for five years up to and including 2014–15
- extend the certainty over quantitative limits that might apply on the use of Kyoto units thereafter by one year, every year
- at the end of 2008, in the context of the white paper, confirm the types of Kyoto units that will be recognised for compliance in the scheme for the period 2010–11 to 2012–13
- in early 2010 confirm the types of Kyoto units that will be recognised for compliance in the scheme for five years up to and including 2014–15
- extend the certainty on the types of Kyoto units that will be recognised for compliance thereafter by one year, every year
- at the end of 2008, in the context of the white paper, confirm restrictions on the conversion of Australian permits into Kyoto units for sale and transfer to other countries for the period 2010–11 to 2012–13
- in early 2010 announce any provisions and relevant restrictions that might apply to the conversion of permits into Kyoto units for sale and transfer for other countries for the period 2012-13 to 2014–15
- extend the certainty on provisions and relevant restrictions that might apply to the conversion, sale and transfer of units to other countries thereafter by one year, every year.

6.9 Future linking arrangements

Choices about the nature and extent of international linkages are likely to change over time. Future decisions about linking would be guided by the overall objective of the scheme to meet Australia's emissions reduction targets in a cost effective way that supports an effective global response to climate change.

It would be in Australia's best interest to have no restrictions on links with international carbon markets that are underpinned by an effective global constraint on emissions. As international markets mature many of the current limitations of linking are likely to be overcome. Similarly as the Australian scheme matures it will be important that entities have access to a range of abatement opportunities so that they can best manage their costs. The Government has a preference to relaxing restrictions on linking with credible schemes and mechanisms over time as the international architecture develops and the Australian scheme matures.

In general, future linking decisions are likely to be influenced by technical and strategic considerations. In particular, consideration of the environmental credibility of the scheme to which links are being contemplated. A minimum technical requirement is that eligible compliance permits within the scheme are underpinned by robust and credible emissions estimation, reporting and assurance mechanisms.

Also important is the credibility of the scheme cap—that is, whether it contributes to the development of an effective global response to climate change. This is an issue for strategic judgement. For example, Australia's strong international negotiating position on the need for significant cuts in global emissions could be undermined by linking to a scheme in a developed country that had only very weak emissions constraints. In some circumstances, however, even weak emissions constraints could represent important progress towards an effective global response, in which case linking might be consistent with Australia's international position.

Other aspects of scheme design could also affect linking; for example, whether the scheme includes similar banking and borrowing provisions or a low price cap. Linking would make such features available to liable entities in both schemes. This could be contrary to the Government's intentions and might therefore be a reason to defer linking. Other differences in scheme design, such as approaches to coverage or permit allocation, are not technical impediments to linking. However, there might not be public support for linking to schemes that adopt very different approaches. Linking arrangements would need to remain consistent with Australia's international climate change and trade obligations.

The Garnaut Review indicates that in assessing future linking arrangements the compatibility of the market proposed to be linking with the Australian scheme would be an important consideration. '*Both markets need to embed mutually acceptable levels of mitigation ambitions (or one market would undermine the other by pushing prices too low). They both need to have adequate monitoring and enforcement mechanisms, and they need to have compatible market rules – for example, on the unit of emissions, and potentially on lending and hoarding.*' [33]

The Australian Government is engaging with other countries who are also implementing emissions trading schemes to ensure barriers to linking are minimised (Box 6.7).

Box 6.7
Engaging with other countries on international emissions trading

International carbon action partnership

The International Carbon Action Partnership (ICAP) is made up of countries and regions that have implemented or are actively pursuing the implementation of carbon markets through mandatory cap and trade systems. The partnership provides a forum to share experiences and knowledge. Sharing and evaluating best practices will help ICAP members determine the extent to which their respective programs can be supported by, and or benefit from, the ICAP process and to ensure the future linkability of schemes.

Australia - New Zealand joint officials group on emissions trading

The Australia – New Zealand Joint Officials Group on Emissions Trading was established on 15 June 2007 by the Australian and New Zealand Prime Ministers to share experience and expertise in designing and developing national emissions trading systems; and to maximise prospects for future compatibility and harmonisation of Australian and New Zealand systems with each other and with other future emissions trading schemes, should governments decide to link systems in the future.

It is also open to Australia to pursue links with other emissions trading schemes, that is, to accept compliance units from these other countries' schemes for the purpose of complying with the domestic scheme. To meet international obligations it would be important that such exchanges involved the transfer of recognised international units, such as an AAU. Transfers within the European Union Emissions Trading Scheme are shadowed in this way with transfers of AAUs at the country level. The European Union scheme has also linked with Norway in this way. Many of the benefits of closer bilateral links, such as the expansion of low-cost abatement options, are achievable through indirect links via the Kyoto Protocol flexibility mechanisms.

The Government considers the priority in setting up the scheme is to ensure it functions smoothly. Accordingly, consideration of direct bilateral linkages is not a short-term priority. There may be future benefit in closer bilateral links to other national emissions trading schemes, particularly those within the region. Such links would need to be considered on a case-by-case basis, but could ultimately extend to mutual recognition of compliance units and harmonisation of other aspects of scheme design and rules.

6.14 Preferred position

Linking arrangements would be subject to review in the light of ongoing international negotiations and market development, with a clear preference for relaxing restrictions on linking with credible schemes and mechanisms as the Australian scheme matures.

The Government would investigate on a case-by-case basis more direct bilateral linking opportunities (including mutual recognition of compliance units and harmonisation) with the schemes of other countries, after the scheme has been established.

Endnotes

1 For example, the EU Emissions Trading Scheme, the New Zealand Emissions Trading Scheme and the Regional Greenhouse Gas Initiative in the United States.

2 United Nations Framework Convention on Climate Change, Decision 13/CMP.1, Modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol.

3 Articles 30–45, Decision 9/CMP.1, Guidelines *for the implementation of Article 6 of the Kyoto Protocol*, United Nations Framework for the Convention on Climate Change, FCCC/KP/CMP/2005/8/Add.2, 30 March 2006.

4 United Nations Framework Convention on Climate Change, Decision 11/CMP.1, modalities, rules and guidelines for emissions trading under Article 17 of the Kyoto Protocol.

5 United Nations Framework Convention on Climate Change, Decision 13/CMP.1, modalities for the accounting of assigned amounts under Article 7, paragraph 4, of the Kyoto Protocol.

6 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

7 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

8 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

9 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

10 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

11 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008, p 375.

12 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008.

13 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

14 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

15 Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms.

16 Communication from the Commission to the Council and to the European Parliament on the assessment of national allocation plans for the allocation of greenhouse gas emission allowances in the second period of the EU Emissions Trading Scheme accompanying Commission Decisions of 29 November 2006 on the national allocation plans of Germany, Greece, Ireland, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Sweden and the United Kingdom in accordance with Directive 2003/87/EC.

17 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

18 New Zealand Finance and Expenditure Committee, *Climate Change (Emissions Trading and Renewable Preference) Bill (187–2) (16 June 2008)* Report, 16 June 2008.

19 Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol's project mechanisms.

20 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008.

21 World Bank 2007, *State and trends of the carbon market 2007.*

22 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008.

23 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

24 Proposal for a Directive of the European Parliament and of the Council 2008/0013 of 23 January 2008 amending Directive 2003/87/EC.

25 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008.

26 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

27 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

28 Proposal for a Directive of the European Parliament and of the Council 2008/0013 of 23 January 2008 amending Directive 2003/87/EC.

29 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008.

30 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

31 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

32 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008.

33 Garnaut Climate Change Review, *Draft Report–June 2008*, Commonwealth of Australia, 2008, p 376.

7. Auctioning of Australian carbon pollution permits

This chapter sets out a rationale for the auctioning of carbon pollution permits and proposes a scheme auction design.

Once created, carbon pollution permits need to be allocated or released to the market through either free allocation or by auction. Auctioning is an efficient method of allocating permits. However, free allocations can help achieve other important policy objectives (see Chapters 9 and 10).

This chapter considers the following issues:

- Section 7.1 discusses how permits can be issued or released to the market.
- Section 7.2 discusses the advantages of auctioning as an allocation method.
- Section 7.3 discusses auction governance arrangements.
- Section 7.4 discusses the role of auctions in the scheme.
- Section 7.5 discusses considerations in auction design.

7.1 Allocating carbon pollution permits

The Government will create and issue carbon pollution permits, which will be acquired and surrendered by liable entities to meet their obligations under the scheme (as discussed in Chapter 5). They will also be traded in the marketplace, with the price of permits reflecting the market's assessment of the value of emitting one tonne of CO_2-e (carbon dioxide equivalent).

Once created, permits need to be issued or released to the market by way of free allocation or auction. The way in which this is done is an important consideration in the design of the scheme.

Auctioning is an efficient method of allocating permits in the Australian economy. However, free allocations can achieve other important policy objectives, such as effectively delivering transitional assistance to emissions-intensive trade-exposed industries and strongly affected industries (see Chapters 9 and 10). The rationale for using free allocations to achieve these other policy objectives is discussed in Chapters 9 and 10. The remainder of this chapter deals with the advantages of auctioning permits and the details of the auction's proposed design.

7.2 Advantages of auctioning as an allocation method

In the context of the scheme, an auction is a competitive process where government issues permits and participants bid for them.

The key advantages of auctions for the distribution of permits include:

- Allocative efficiency—a well-designed auction will channel permits to those bidders that value them the most, deploying resources to derive maximum benefit. Over time, however, the secondary carbon market will begin to play a greater role in this regard (see Chapter 3).
- Efficient price discovery—important price information is provided by the interaction of bidders at an auction. This facilitates price discovery, which has a significant role in stimulating behavioural change; for instance, in helping entities to manage their emissions obligations and make investment decisions. The discovery process is reinforced when the results of early auctions and price information are communicated at the start of the scheme. Over time, as the secondary carbon market develops, the role of the auction in price discovery will diminish.
- Auction revenue—the sale of the permits at auction also generates revenue. The Government may use this revenue to fund a range of different activities.

However, it should be noted that the objective of the auction design is not to maximise revenue, where such an approach would interfere with other objectives of the scheme.

Several emissions trading models have advocated the use of auctions to distribute permits. These include the Task Group on Emissions Trading (TGET)[1], the National Emissions Trading Taskforce (NETT)[2], the Garnaut Climate Change Review[3] and New Zealand's proposed emissions trading scheme.[4] The Regional Greenhouse Gas Initiative in the United States[5] and Phase III of the European Union Emissions Trading Scheme[6] are expected to use extensive auctioning.

The economic efficiency benefits of auctioning make it highly desirable to progressively move towards 100 per cent auctioning of permits over the longer term. However, free allocations of permits for transitional assistance, such as assistance to emissions-intensive trade-exposed industries, can play an important role in the smooth and effective introduction of the scheme.

7.1 Preferred position

Allocations would, over the longer term, progressively move towards 100 per cent auctioning as the scheme matures, subject to the provision of transitional assistance for emissions-intensive trade-exposed industries and strongly affected industries.

7.3 Governance arrangements

The Government must decide who should design and run auctions under the scheme.

Generally, the Government considers that the scheme regulator will be best placed to manage ongoing auction policy design and operational matters, with wide discretion prescribed within a framework set by the relevant legislation (see Chapter 13).

A degree of operational flexibility is desirable, because the auction design is likely to need to be fine-tuned over time. The Australian Office of Financial Management (AOFM) is an example of an agency that manages an auction process on behalf of government, and its governance arrangements are discussed in Box 7.1.

Box 7.1
Australian Office of Financial Management—governance arrangements

The AOFM is a specialist Australian Government agency responsible for all operational aspects of Australian Government debt management. This includes issuance of Treasury Bonds and Treasury Notes (a short-term debt instrument used to finance short-term funding needs) and the execution of debt related derivative transactions. The AOFM is also responsible for managing the Australian Government's cash balance.

Although the AOFM is part of the Department of the Treasury, its finances are separate from those of the Department as it is a prescribed agency under the *Financial Management and Accountability Act 1997*. It is accountable to the Treasurer and, through him, to the Government, the Parliament and the public.

Tender objectives

Treasury Bond issuance is undertaken to maintain liquid and efficient Treasury Bond and Treasury Bond futures markets. Issuance of Treasury Bonds by tender aims to ensure issuance is highly transparent, equitable and competitive. This is expected to result in the sale of Treasury Bonds on the most favourable terms possible for the Government; that is, the lowest interest cost.

Authority to issue

The *Commonwealth Inscribed Stock Act 1911* provides the Treasurer with the power to issue Treasury Bonds, including in such a manner and upon such terms and conditions as he directs.

Each year, the AOFM seeks the Treasurer's approval for the total amount of Treasury Bonds to be issued in the next financial year. These details are published in the Australian Government's Budget Papers.

Officers of the AOFM have been authorised to issue Treasury Bonds on behalf of the Treasurer. This provides the AOFM with responsibility for all operational matters concerning the issuance of Treasury Bonds, including for establishing tender procedures, deciding the bond lines and amounts offered at individual tenders, and the timing of tenders. The AOFM publishes a debt issuance calendar outlining details of expected Treasury Bond tenders. The results of the tenders are published by electronic financial news services and on the AOFM website.

It will be more efficient for the regulator to make adjustments than to require the minister to approve small changes to auction design. However, the Government proposes that the scheme regulator would remain subject to ministerial direction on auction policy and be required to keep the relevant minister informed of its auction strategy. Auction policy design decisions and auction rules should also be made public.

The Government proposes that the regulator will be responsible for auction policy, and be tasked with the objective of promoting efficient allocation and price discovery of permits. This flexibility within a framework will enable the regulator to respond to the evolving needs of the carbon market.

However, the scheme regulator may not be established in time to develop and consult on a detailed auction strategy for the start of the scheme. It would be appropriate, therefore, for the relevant minister to use powers of direction in the early stages of the scheme, providing business with an opportunity to be consulted on design proposals and ensuring early certainty about auction policy decisions. Later, once the regulator is established, it would assume responsibility for auctions policy in accordance with the framework and principles outlined above. The roles of the minister and the regulator would be subject to review, as discussed in Chapter 13.

The remainder of this chapter sets out the Government's preferred position on auction design. Stakeholder feedback on these features will inform directions that the minister will give the regulator in respect of auction rules at the start of the scheme, after which time it is expected that the regulator would use its own discretion in managing permit auctions.

7.2 Preferred position

The relevant minister would direct the regulator in the early phase of the scheme.

The scheme regulator would later assume all auction policy responsibilities.

The responsibilities of the scheme regulator, auction design, and the relevant minister's power of direction would be reviewed at the five-year review.

7.4 Considerations in auction design

The two assessment criteria that are most relevant for evaluating auction policy and design are whether they are economically efficient and whether they minimise implementation risk.

The remainder of this chapter draws on the expert auction report of Evans and Peck, commissioned by the NETT, that assessed various design options.[7]

7.4.1 Economic efficiency

A well designed auction can make a significant contribution to the overall efficiency of the scheme (see Chapter 3 for a discussion of an efficiently functioning carbon market).

An auction can provide reliable information to the market about the price of carbon. Such information can assist investors make decisions about how best to adapt to a carbon-constrained environment.

A process that is most likely to give investors clear and reliable price information is one where strategic bidding processes are difficult for investors to engage in; that is, a process where bidders cannot manipulate the ultimate price outcome through their size or by colluding with other bidders.

A number of design features can tend to reduce the capacity for strategic bidding behaviour, which could otherwise cause the initial price to deviate from the underlying fundamentals of the permit market:

- a large competitive field of bidders
- a simple system that encourages participation
- a stable set of auction rules that are not subject to arbitrary or unpredictable changes
- transparent processes that rapidly reveal price information
- low participation costs, where fees or charges to participate are low or non-existent, though some rules for creditworthiness may be desirable.

7.4.2 Reducing implementation risk

Auctions enable permits to be issued to the market to support an early and efficient trading environment.

The scheme is also likely to have a smoother start if transparent price signals are available at the start of the scheme. Well-designed and regular auctions have an important role to play in reducing implementation risks and can provide market participants, including liable entities, with the information they will need to adjust to the new environment.

A number of specific auction design approaches can help reduce implementation risks by facilitating and encouraging the participation of liable entities in the early years of the scheme, as familiarity and confidence with the new environment develops.

For example, provision could be made for 'double-sided' auction services (which allow entities other than the Government to offer their permits for sale in the same auction), and auctions of future vintage permits. Although the need for these design options may diminish rapidly, in the early phase of the scheme they could play a valuable role in reducing implementation risks as the secondary market develops.

7.4.3 International experience and Australian proposals for auction design

Although auctions of permits have been relatively rare internationally (see Box 7.2 for examples), there is a wealth of relevant Australian and international experience in auctioning scarce public resources.[8] Together, these auction market experiences provide useful insights into auction policy design options.

For example, the experience gained from government auctions of scarce resources in Australia and overseas, although not related specifically to the auction of environmental resources, could be expected to apply to the auction of permits, particularly in relation to the mechanics of the auction process.

Box 7.2
International experience with environmental market auctions

Examples of auctions in environmental markets include the auction of:

- sulphur dioxide permits, conducted since 1983 as part of the United States Acid Rain Program
- nitrogen oxide allowances, held in Virginia in 2004 and 2005
- emissions permits, held in 2002 under the United Kingdom Emissions Trading Scheme
- emissions permits in Ireland, Hungary, Denmark and Lithuania, held from 2005 to 2007 as part of the first phase of the European Union Emissions Trading Scheme.

Although auctions are increasingly being used in recently proposed schemes and subsequent phases of existing schemes, there is little experience of auctions in which a large percentage of the total number of permits in a scheme are allocated.

Source: Evans and Peck report on auction design commissioned by the National Emissions Trading Taskforce.

7.5 Auction design features

The frequency and timing of auctions determines how quickly permits are issued, and influences the conditions under which reliable price signals are established in the market.

7.5.1 Auction frequency

The Government will need to decide how many auctions it will hold each year, both at the start of the scheme and on an ongoing basis. Its decisions will have implications for the size of each auction, which in turn may affect the accuracy of the price information revealed at each auction.

In considering the frequency of auctions and the implications for auction size, three factors are relevant:

- the frequency of auctions–more frequent auctioning means smaller auction sizes.
- the number of permits to be auctioned before or after the relevant obligation period–more auctioning outside the relevant obligation period means that there are fewer permits remaining for auction within the obligation period, reducing the size of each auction.
- the proportion of the cap that is allocated through free allocations–the greater the proportion of permits that are freely allocated, the smaller the size of the auctions.

Box 7.3 provides a summary of international and other Australian schemes.

Box 7.3
International and Australian proposals on auction frequency

The NETT[9] and the Regional Greenhouse Gas Initiative[10] proposed that auctions be held quarterly. The Task Group on Emissions Trading[11] did not make recommendations on auction frequency. The Garnaut Climate Change Review[12] has suggested regular auctions on a fixed schedule–weekly, monthly quarterly or on any other basis that suited market participants. No indication on auction frequency has been provided for Phase III of the European Union Emissions Trading Scheme[13], or in the New Zealand emissions trading scheme.[14]

In theory, auctions could be held any number of times each year. Three simple options include:

- weekly auctions
- quarterly auctions
- annual auctions.

As noted earlier, more frequent auctions will mean smaller auctions. The frequency of auctions and its impact on the size of the auction will have implications for the:

- reliability of price information revealed at each auction
- timeliness of the price information
- absorptive capacity of the market
- cash-flow consequences for liable entities
- administrative cost to business and government.

Reliability of the price information revealed at each auction

More frequent auctions may reduce the reliability of the price information used to inform investment decisions early in the scheme.

As discussed in Chapter 3, in order to support investment decisions, it is important that the price information available to market participants is accurate. The auction market will play an important role in disseminating price information to liable entities and market participants while the secondary market for permits is immature. It is important, therefore, that this signal be as reliable and efficient as possible.

The price should encompass all available market expectations related to the demand and supply of permits and the bidding field should be competitive and representative of the broader market.

Smaller and more frequent auctions can lead to a less competitive bidding field, and compromise the accuracy of price information from the auction. The Government will need to ensure that auctions do not fall below the minimum size needed for competitive bidding if the risk of inaccurate price information is to be avoided.

The timeliness of the price signal

More frequent auctions may improve the timeliness of price signals to inform investment decisions. As discussed in Chapter 3, a range of factors will influence the underlying demand and supply for permits in the scheme.

Businesses will benefit from up-to-date and accurate price information when making investment decisions. For example, while the secondary market is immature, liable parties could review the price of auctioned permits when making their abatement decisions.

However, once the secondary market has matured, investors will have readily observable real-time market prices.

The absorptive capacity of the market

The frequency and size of auctions may have implications for the absorptive capacity of the market, that is, the ability of the market to accommodate large transactions. Smaller quantities of permits are likely to be more readily absorbed by the market and more frequent auctions may enable a larger number of permits to be absorbed.

In considering the issue of market absorption it is important to recognise that the size of the auction will determine, to a large extent, the level of participation (and therefore demand). Where auctions are infrequent, participants will be more likely to attend, knowing that opportunities for purchasing permits are limited.

Cash flow management of liable entities

Frequent auctions may provide businesses with an additional option for managing their obligations under the scheme, particularly given any working capital or debt financing constraints they may have. For example, liable entities may wish to align expenditure on permits with their accruing liability over the period. At the same time, firms will generally pass the carbon cost through to consumers for emissions intensive goods. This is similar to the way in which businesses manage their taxation liabilities, where they develop strategies for managing their accruing liabilities.

While frequent auctions are one way for businesses to manage their obligations, an effective secondary market would also allow them to purchase permits throughout the year. The difference between initial sales of permits and ongoing trade in such permits is comparable with the way in which shares are traded on a stock market. Even though there are relatively few initial primary market share offerings, shares are traded on all business days, and the secondary market is a reliable and predictable source of price information. Indeed some small trades of derivative instruments for permits have already occurred. These instruments incorporated forward prices of around $19 for 2012.[15]

In the European Union Emissions Trading Scheme a deep and liquid secondary market in permits developed relatively quickly. It could be expected, therefore, that a relatively rapid development of the scheme market will happen here, providing businesses with the necessary opportunity to secure regular and even daily purchase options all year around. However, this process of market development may be hindered if auctions are held too frequently.[16]

That said, the Garnaut Review notes that 'the Review expects deep market-supporting financial services to emerge quickly around the scheme, so that the market will be able to operate effectively across a range of frequency of auctions'.[17]

Administrative cost to government

More frequent auctions also have a higher administrative cost for the regulator. However, the capacity to hold auctions on the internet means that costs are unlikely to be an important factor in determining auction frequency.

In summary, frequent, for example weekly, auctions may provide a convenient facility for some market participants to manage their obligations. However, weekly auctions will be much smaller than quarterly or annual auctions.

This reduction in size may increase the risks of less efficient price information flowing to market participants. However, extensive testing and stakeholder feedback are necessary to determine the significance of such risks.

Weekly auctions may mean less accurate price formation. Conversely, annual auctions may be too infrequent for market participants while the secondary market is still maturing. It is possible also that a single annual auction might be too difficult for the market to absorb.

Striking the right balance between auction frequency and efficiency is difficult to achieve before the scheme starts and it is possible that experience will lead to changes in auction frequency over time.

The Evans and Peck report recommends that consultations with key stakeholders about the preferred frequency of auctions start by considering quarterly auctions. The Government will seek stakeholder feedback on the merits of different auction frequencies, taking into account the particular risks associated with the reliability and efficiency of price information provided to the market.[18]

7.3 Preferred position

Four auctions would be held each financial year, one in each quarter. The Government seeks stakeholder feedback on the relative risks of alternative models, such as annual or weekly auctions.

7.5.2 Auction timing

Within year timing of auctions

All permits for a particular vintage year could be issued before the end of the relevant compliance year. However, some stakeholders have suggested that at least one auction be held after the end of the relevant financial year but before the particular vintage's surrender date.

While market participants will need to know the total quantity of permits available for each obligation period and at each auction, providing participants with the opportunity to purchase permits before, during and after the obligation period is beneficial. Holding an auction prior to the surrender date would provide liable entities with an extra opportunity to reconcile their permit requirements once emissions data are finalised for the year. As discussed in Chapter 3, the Government also proposes to provide limited borrowing of the subsequent year vintage which will also assist smooth market operation in this period.

7.4 Preferred position

At least one auction of the relevant year's vintage would be held after the end of the financial year in the lead-up to the relevant surrender date. A suggested date would be within one month prior to the acquittal date.

Timing of the first auction

The first auction could be held at any time prior to the start of the scheme, or after the scheme has commenced.

Some permits could be auctioned in advance of the start of the scheme to provide early carbon price signals to businesses, enabling them to make more informed investment decisions. An early auction would also help prompt the development of an active secondary market.

However, some practical considerations limit how early the first auction could occur.

The legislation establishing the scheme must have commenced before the first auction takes place. The current timeline suggests that this would not be until the second half of 2009. Further development of a national registry will need to be completed before the first auction of permits, to enable permits to be held in accounts in the registry (see Appendix C).

In order for the auction to generate meaningful price signals, the first auction should preferably occur after participants have been able to develop informed opinions about overall demand and supply conditions. In practice, this means that they would need to know the scheme cap (the supply of permits). As discussed in Chapter 4, it is proposed that final announcements about the cap would not be made until 2010, prior to the scheme's start on 1 July in that year, though these announcements would simply be giving effect to the release of the medium-term emissions trajectories in the context of the white paper.

Entities that are liable under the scheme are required to monitor and report their emissions for the year ended 30 June 2009 under the *National Greenhouse and Energy Reporting Act 2007*. Once it is made public, this information will be useful for both liable entities and financial market analysts in assessing value in the market. The first greenhouse and energy reports are required to be lodged in October 2009. This implies that the first auction should be able to take place some time in early 2010.

7.5 Preferred position

The first auction would take place as early as is feasible in 2010, prior to the start of the scheme.

7.5.3 Advance auction of future financial year vintages

Advance auctions

As discussed in Chapter 3, it is proposed that permits be differentiated by annual vintages; that is, the financial-year scheme cap to which the permit pertains. An issue is whether some permits of future vintages should be auctioned in advance and, if so, how far in advance.

Future vintages may be an alternative to the spot market and any associated derivative markets for liable entities seeking to manage future emissions obligations. For example, a liable party could, in respect of a future emissions obligation:

1. wait until their future obligation arises and purchase permits at that time
2. buy current vintage permits to use later
3. buy the future vintage now in anticipation of the future obligation or
4. buy a derivative that would deliver the necessary permits to meet the expected future obligation.

In those circumstances, the auctioning of future vintages would provide the added flexibility to the liable party of option 3. Some stakeholders have suggested that advance auctions will assist the development of price signals for future-dated permits and therefore assist in option 4. However, in a market with banking and limited borrowing (the preferred model as outlined in Chapter 3), the markets for current and future permits will be directly linked. In this situation the current spot price may capture the market's assessment of the costs of meeting the broad carbon constraint over time.

Advance auctions of future vintages can also contribute to greater confidence in the credibility and longevity of the scheme. McKibbin and Wilcoxen argue that the credibility of a scheme, which is essential to the scheme's success, can be achieved by 'building a national constituency with a financial stake in maintaining a climate change policy is possible if the policy involves long-lived tradable emissions permits. Once long lived permits have been distributed, permit owners will have a valuable financial asset whose price depends directly on the health of the policy'.[19]

With banking, current year permits could be held in perpetuity and therefore could partly provide the necessary financial interest in the scheme to contribute to the scheme's credibility. In practice, however, the volume of banked permits at any point of time would be contingent on the volume of permits surrendered in past years and therefore may not match the volume of long lived permits proposed by McKibben and Wilcoxen.[20]

While advance auctions can provide flexibility for liable parties and contribute to the credibility of the scheme they can also increase the complexity of auctions, and reduce the number of permits of particular vintages available at each auction. Depending on how far in advance vintages are auctioned, it may reduce the Government's flexibility over time to set caps. The extent of those disadvantages will depend on how many future vintages are auctioned, as discussed below.

Number of years of future vintages to be auctioned

Once an in-principle decision has been made to auction vintages in advance, a further consideration relates to the number of future vintage years that can be auctioned. Some international and other Australian scheme proposals are discussed in Box 7.4.

Box 7.4
International and other Australian scheme proposals

The expert auction report by Evans and Peck, commissioned by the NETT, recommended quarterly auctions of current year vintages and auctions of three future year vintages once a year (to be conducted simultaneously with one of the current year auctions).[21]

The NETT proposed auctions of current year and future year vintages.[22] However, the NETT noted 'scope for further work to refine timing and frequency as detailed scheme design progresses' and that, in particular, 'consideration should be given to the different incentives faced by bidders in relation to timing'. The Garnaut Climate Change Review[23] proposed one to two years (spot plus one future vintage) and the RGGI[24] four years (spot plus three future vintages).

The European Union Emissions Trading Scheme[25] and the proposed New Zealand Emissions Trading Scheme[26] do not advance auction future vintages.

In theory, many years of distant future vintages could be advance auctioned.

Future vintages provide businesses with options for hedging future year obligations rather than hoarding early vintages, although the utility of such auctions is likely to diminish rapidly for far-dated vintages. A greater number of future vintages increases the number of auctions per vintage, thereby reducing the average auction size and efficiency. In addition, because simultaneous auctions are desirable to promote efficient price discovery, the complexity of auctions also increases with the number of vintages auctioned at the one time.

Given the decisions available in relation to the length of scheme caps, some clear options for advance auctions emerge. One option is to advance auction vintages outside the scheme cap (that is, beyond five years) or to auction the current vintage plus more than four future vintages. However, as discussed earlier, the price information afforded by such future-dated vintages is unlikely to be revealing to the market.

A second option would be to advance auction up to the length of the scheme cap; that is, the current vintage plus four future vintages. This option could be constrained further by limiting it to the current year plus three future vintages, or to as little as the current year plus one future vintage.

In practice, there appears to be little difference between the options, other than in relation to the overall frequency of auctions of any particular vintage, and the possible additional complexity that might arise when a large number of advance auctions are held.

The Evans and Peck consultancy report commissioned by the NETT suggested a model in which there would be auctions of the current vintage plus four future vintages.[27] Given the desire to reduce implementation risks, it may be more prudent to limit the auction of future vintages to three years. Stakeholder feedback is sought on the risks and trade-offs applicable to such an option.

7.6 Preferred position

Four years of vintages would be auctioned (current vintage plus advance auction of three future vintages).

Frequency of advance auctions of future vintages

If the advance auction of future vintages is pursued, a further issue is how many auctions of future vintages should occur each year.

There are a number of options for advance auction frequency. The Government could hold advance auctions at every auction, every second auction or at one auction per year. International and other Australian scheme proposals are detailed in Box 7.5.

Box 7.5
Frequency of advanced auctions in international and other Australian scheme proposals

Under the RGGI[28], auctions will be held quarterly and future allowances will be made available up to four years in advance of their vintage. It has been recommended that under the RGGI scheme, on each of the quarterly auction days, an auction be held for current vintage-year allowances and an auction be held for a future vintage. First-quarter auctions would include an auction of allowances from the one-year-ahead vintage, second-quarter auctions would include an auction for the two-year-ahead vintage, and so forth.[29]

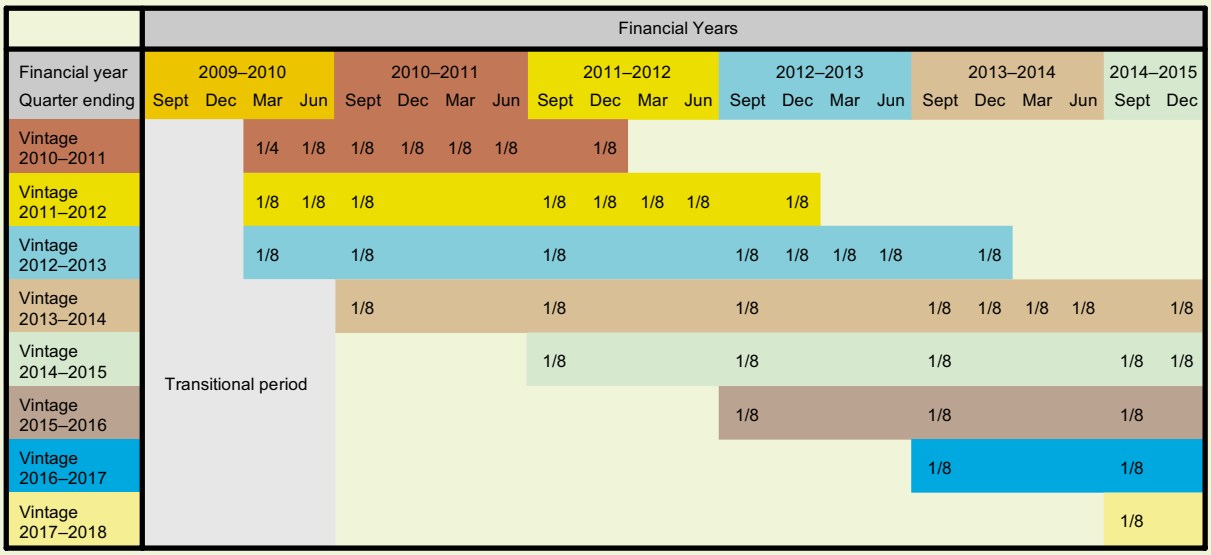
Evans and Peck also recommended quarterly auctions in their report to the NETT. However, they recommended that the auction of future vintages be held only in the second quarter of each compliance year.

The frequency of advance auctions for future vintages is likely to be less important than it is for the current vintage. Subject to any borrowing allowance, future-dated permits cannot be surrendered until the year of their vintage. This lead time provides flexibility which renders the short-run liquidity (capacity to purchase at short notice) of the market less critical. Many businesses are likely to plan for their future vintage permit needs at one stage during the year, and annual auctions of future vintages would align with this.

A higher frequency of advance auctions would decrease the number of permits of a particular vintage at each auction reducing auction efficiency.

To maintain the efficiency and simplicity of the auction, one advanced auction of future vintages per year would appear to be sufficient to meet the objectives associated with auctioning future vintages. Box 7.6 provides a possible auction schedule consistent with the Government's preferred approach for auction policy.

Box 7.6
Possible initial auction schedule



7.7 Preferred position

The advance auction of future year vintages would occur once each year.

7.5.4 Auction participation

An issue is whether participation at auctions should be universal or restricted to liable entities only.

Universal participation would allow non-liable entities, including financial intermediaries, to participate in auctions. Feedback from some entities has indicated concern that the participation of non-liable entities in auctions may result in speculation and the bidding up of prices.

As noted in Section 7.4, an auction is more likely to deliver accurate price signals if the field of bidders is competitive. Smaller liable entities may need to use the services of specialist financial intermediaries to help them manage their emissions obligations over the year, as it would be too expensive and inefficient for them to directly participate in auctions.

It will be difficult to limit participation and enforce a restricted auction scheme, as excluded entities could simply contract with liable entities to purchase permits on their behalf.

A separate, but related, issue is whether any limits on participation should be based on financial standing. It is likely that some form of financial guarantee will be required to ensure that bidders will be able to pay for the permits they buy at auction, and to encourage only genuine participants.

Before an auction, bidders could be required to lodge a cash deposit or other form of security. Depending on the number of permits a bidder acquires and the price at which they are acquired, the deposit would either be returned or the bidder's payment be reduced. This is a standard feature of many auctions.

7.8 Preferred position

Subject to the lodgement of any required security deposit, universal participation would be permitted at auctions.

7.5.5 Auction type

There are several different types of auction. Each type of auction has particular characteristics that might make it more or less suitable for the auction of permits.

For single vintage auctions, there are two broad auction types: ascending clock auctions or sealed bid auctions. For multiple vintage auctions, there are two broad ascending clock options: simultaneous or sequential. Box 7.7 discusses the auction of Australian Government bonds by the AOFM.

Box 7.7
Auctioning of Australian Treasury Bonds

Treasury Bonds are auctioned by the AOFM (see Box 7.1).

Auction type and tender process

Treasury Bonds are issued by competitive tender through a sealed bid auction process. The tenders are conducted by the AOFM, using the AOFM Tender System. The tender system is an electronic bidding system accessed by bidders via the BLOOMBERG PROFESSIONAL® Service. The BLOOMBERG PROFESSIONAL® Service is a global electronic financial data, news and trading system, which is widely used by institutional participants in Australian financial markets.

Frequency of tenders

The frequency of tenders is dependent on the size of the Treasury Bond issue program. 12 tenders for the issue of Treasury Bonds were conducted in 2007–08.

Size of bids

Each bid for Treasury Bonds must be for a minimum parcel of $1 million face value and in multiples of $1 million. In practice, the parcels tend to be between $400 million and $800 million.

Participation

Bids for Treasury Bonds offered for sale via the AOFM Tender System may only be submitted by entities that are registered with the AOFM. Registered bidders are generally major domestic and international financial institutions that participate in the Australian wholesale debt markets.

Source: Australian Office of Financial Management

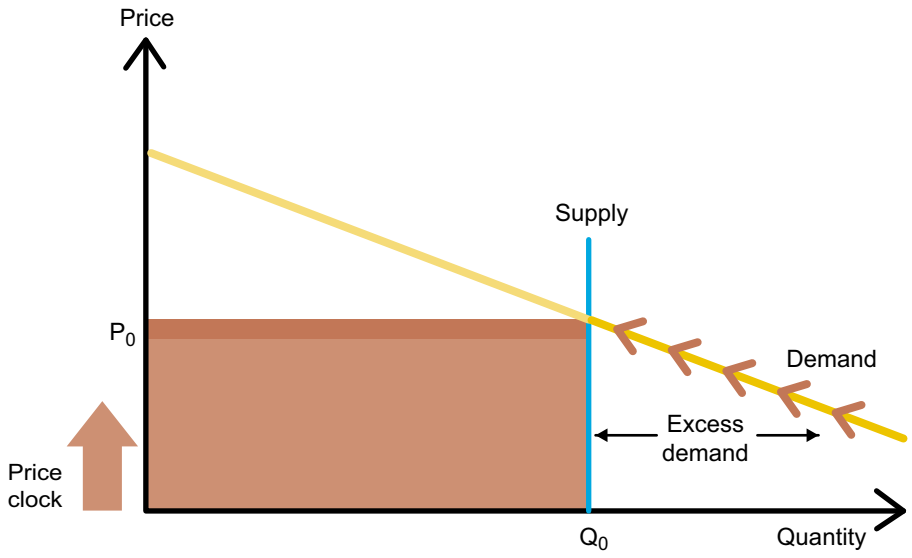
Ascending clock or sealed bid

Ascending clock

In an ascending clock auction the auctioneer announces the current price. Bidders indicate the quantity of permits they are prepared to purchase at that price. If demand exceeds supply, the auctioneer raises the price in the next round and bidders resubmit their bids. This process continues until such time as the quantity offered is equal to or greater than demand. Bidders then pay the price from the previous round.

Ascending clock auctions can also allow proxy bidding whereby bidders put in their demand schedule for permits at various prices. Bidders using this option would need only submit their demand schedule and would not need to participate further in the auction (see Box 7.8 for this and other operational features). This enables bidders to submit bids as would be done under a sealed bid system if this is more convenient (see below). By its nature, ascending clock auctions have a uniform price. Figure 7.1 illustrates the operation of an ascending clock auction.[30]

Figure 7.1 Ascending clock auction



Source: P Cramton, 'Comments on the RGGI Design', University of Maryland paper, 2007.

Sealed bid

In a sealed bid auction, the auctioneer announces the number of permits to be sold. Bidders then submit sealed bids, which only the auctioneer sees. The auctioneer then allots the permits to the highest bidders. The auctioneer can choose to charge the price offered by the lowest successful bidder (uniform price) or have bidders pay the prices bid (pay-as-bid).

Evans and Peck advocated the use of ascending clock auctions because of their transparency. The ascending clock provides the bidders and the market with information throughout the bidding process, which helps with more efficient price setting. This is the primary advantage of ascending clock auctions over sealed bid auctions. The ascending

clock auction also conveys the aggregate demand schedule at the end of the auction, which promotes efficient price discovery in the secondary market.[31]

Some concerns have been raised that ascending clock auctions facilitate collusion. Evans and Peck concluded that an ascending clock auction is unlikely to be susceptible to collusion in the context of the Australian scheme because of the large number of liable entities under the scheme, each of which has only a small proportion of the total scheme obligation. Such a dispersed set of small bidders would be hard to organise for the purpose of collusion. The presence of financial market participants at auction would further limit the potential for collusion by providing a secondary check on auction prices.[32]

The Government's preferred position is to use an ascending clock due to its transparency of operation. In contrast to sealed bid auctions, the ascending clock auction is straightforward to use and provides the bidders and the carbon market with useful information throughout the bidding process. Further, where proxy bidding is allowed, bidders can submit bids just as they would under a sealed bid if they wish to do so.

Sequential or simultaneous advance auction

In a sequential auction, each vintage is sold in a separate auction one after another. Sequential auctions are the simplest auction type to administer and are ideal when the values of the auctioned goods are unrelated. However, they can lead to inefficient prices where goods are related in value, as is the case with multiple vintage auctions. Inefficient relative pricing can occur because bidders cannot see the prices of other vintages when bidding and must second guess the price of vintages yet to be auctioned. This may result in the demand at the earlier auctions being too high or too low, depending on the views of bidders. This in turn will increase or decrease demand at future auctions leading to inefficient price differentials between vintages.

In a simultaneous auction, all vintages are auctioned simultaneously using multiple ascending clocks. The auctioneer announces the price of each vintage in each round and the number of rounds per vintage will depend on the time it takes to complete the auction process (that is, until the supply of permits exceeds demand at the final price).

Simultaneous auctions are more complicated, due to the requirement for bidders to monitor all auctions at once, but can result in more efficient relative prices of goods as bidders can watch prices evolve as they make their decisions. This ensures that the relative prices are accurately reflected in bids. Bidders could pre-specify the value differential at which they will switch vintages to ensure they obtain the right vintage at given price levels. This superiority of price discovery means that, notwithstanding their complexity, simultaneous auctions are preferable when auctioning multiple types of goods (such as different permit vintages). Given modern internet-based auction platform technology, the complexity of simultaneous auctions can be managed at relatively low cost.

7.9 Preferred position

Ascending clock auctions would be used for single vintage auctions, and simultaneous ascending clock auctions would be used for multiple vintage auctions.

Single-sided or double-sided auctions

The Government must decide whether it will allow participants other than the Government to sell permits at auction—a 'double-sided' auction. If double-sided auctions are held, the Government would need to decide who else is allowed to sell permits at auction, which could be only those who have been allocated some permits for free, or any holders of permits.

As discussed in chapters 9 and 10 some market participants may receive a free allocation of permits. A double-sided auction would provide a low-risk, low-cost and transparent mechanism for entities that have received a free allocation of permits to sell them on the carbon market. Reducing risks and transaction costs through a double-sided auction would also encourage those with an excess of free allocations of permits to sell these on the market.[33] This may increase the size of the auction and the liquidity of the secondary market by discouraging hoarding.

However, the provision of a double-sided auction facility for all market participants (rather than just those with free allocations) may affect the development of the secondary permit market by crowding out investment in alternative trading systems (for example, stock exchanges and over-the-counter markets). A balance must therefore be struck between service provision and the need to allow private sector services to develop.

7.10 Preferred position

Only those entities that receive free permit allocations would be allowed to sell them through double-sided auctions in the early phase of the scheme.

7.5.6 Operational features of the auction

The auction administrator will need to determine a range of more minor operational features. A number of those features, as proposed by the NETT and detailed in Box 7.8, are consistent with the Government's overall preferred auction design. Industry feedback is sought on these features for consideration in the context of the broader auction design approach.

Box 7.8
Auction operational features

Uniform pricing

The ultimate price paid per permit would be identical for all successful bidders, regardless of their respective valuations. This result is achieved through the use of an ascending clock system as described in Section 7.5.5.

Aggregate demand revealed each round

At the end of every auction round, the auctioneer provides information on the quantity demanded by participants at the current price. To avoid collusion, individual bids should not be published.

Proxy bidding

Proxy bidding allows bidders to delegate actions to the auctioneer by submitting a set of bidding rules. Bidders could submit their permit demand schedules and then receive the amount specified at the final auction price.

Reserve price

Permits in the auction would have a reserve price, the minimum price below which bids will not be accepted. This would enhance efficiency by limiting abuse of market power or collusion, and accelerating the auction process.

The reserve price is an administrative mechanism aimed at improving the efficiency of the auction. It is not intended as a price floor in the market and to lead to a change in annual caps. Unsold permits would need to be sold at future auctions.

Internet auction platform

Auctions may be conducted using an internet platform. The internet platform will encourage more entrants and greater competition because it is low cost and readily accessible.

Parcel size

Parcel sizes may be restricted. Minimum parcel sizes may apply for administrative simplicity, as occurs in other markets such as those for shares. Consideration will need to be given to a maximum parcel size to ensure credible auction results while still allowing legitimate bidders to participate at auction.

The Government seeks comment on the operational feature of the auction detailed in Box 7.8.

Endnotes

1 Prime Ministerial Task Group on Emissions Trading, *Report of the Prime Ministerial Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

2 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

3 Garnaut Climate Change Review, *Draft Report--June 2008*, Commonwealth of Australia, 2008.

4 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

5 P Cramton, *Comments on the RGGI Design*, University of Maryland paper, 2007.

6 Proposal for a Directive of the European Parliament and of the Council 2008/0013 of 23 January 2008 amending Directive 2003/87/EC.

7 In 2007, the National Emissions Trading Taskforce engaged Evans and Peck, an international management consultancy, to provide detailed qualitative advice on a preferred auction model. The full text of the Evans and Peck auction report was publicly released in August 2007. The report is available from http://www.emissionstrading.net.au/__data/assets/pdf_file/0015/8421/Auction_Design_Report.pdf

8 For an example of an analysis of an international experience see P Cramton, *Comments on the RGGI Design*, University of Maryland paper, 2007.

9 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

10 Regional Greenhouse Gas Initiative: www.rggi.org

11 Prime Ministerial Task Group on Emissions Trading, *Report of the Prime Ministerial Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

12 Garnaut Climate Change Review, *Draft Report--June 2008*, Commonwealth of Australia, 2008.

13 Proposal for a Directive of the European Parliament and of the Council 2008/0013 of 23 January 2008. amending Directive 2003/87/EC.

14 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

15 The Australian Gas Light Company completed a future sale of permits, promising to sell permits equivalent to 10,000 tonnes of carbon dioxide equivalent emissions to Westpac on February 1, 2012, for $19 per permit.

16 AD Ellerman and PL Joskow, *The European Union's Emissions Trading Scheme in perspective*, Pew Center on Global Climate Change, 2008.

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19 W McKibbin and P Wilcoxen, *A Credible Foundation for Long Term International Cooperation on Climate Change*, Lowy Institute for International Policy, Working Papers in International Economics No. 1.06, June 2006, p. 4.

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24 Regional Greenhouse Gas Initiative: www.rggi.org

25 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

26 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007

27 Evans & Peck report on auction design commissioned by the National Emissions Trading Taskforce.

28 Regional Greenhouse Gas Initiative: www.rggi.org

29 P Cramton, '*Comments on the RGGI Design*', University of Maryland paper, 2007

30 P Cramton, '*Comments on the RGGI Design*', University of Maryland paper, 2007

31 Evans & Peck report on auction design commissioned by the National Emissions Trading Taskforce.

32 Evans & Peck report on auction design commissioned by the National Emissions Trading Taskforce.

33 This would most likely be the emissions-intensive trade-exposed firms in receipt of free allocations to cover both their direct and indirect emissions costs – where their free indirect emissions allocations need to be on-sold in order to provide the necessary funds to meet their higher electricity costs.

8. Household assistance measures

This chapter considers the impacts of the Carbon Pollution Reduction Scheme on households and outlines the Government's commitments to address these impacts. It also discusses the potential role for energy efficiency measures to complement the scheme.

As outlined in Chapter 1, the introduction of the scheme is designed to enable Australia to reduce its greenhouse gas emissions at the lowest possible cost. It will do this by changing the relative prices of goods and services, which in turn will lead to changes in production and consumption decisions across the economy. In one way or another, all of these changes will flow through to households.

The introduction of the Carbon Pollution Reduction Scheme is not intended to have adverse income or distributional effects and, in particular, not to re-distribute income away from low-income households. In recognition of this, the Australian Government has made a commitment to develop measures to assist households, particularly low-income households, adjust to the impacts of the scheme.

This chapter addresses the following issues:

- Section 8.1 discusses key Australian Government commitments in respect of household assistance
- Section 8.2 discusses the scheme's broad impacts on households
- Section 8.3 outlines illustrative price impacts of the scheme on different household groups
- Section 8.4 outlines energy efficiency opportunities and challenges
- Section 8.5 outlines commitments regarding the further development of household assistance measures

8.1 Household assistance commitments

The revenue provided by the auctioning of the carbon pollution permits provides the Government with the capacity to assist Australians – households and businesses – adjust to the scheme.

The Government has committed that every cent raised for the Australian Government from the Carbon Pollution Reduction Scheme will be used to help Australians – households and business – adjust to the scheme and to invest in clean energy options.

In order to give households time to adjust to the scheme, the Government will make an offsetting cut in fuel taxes as part of a broader on-going response to the rise in the cost of transport fuel which continues to strongly affect Australian households and transport businesses. The Government will cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the introduction of the scheme. The Government will periodically assess the adequacy of this measure for three years and adjust this offset accordingly. At the end of the three year period the Government will review this adjustment mechanism.

The Government is also committed to provide low-income households with increases in assistance through the tax and payment system and all households with other assistance to address the impact on their living standards.

Government is committed to:

- Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and provide other assistance to meet the overall increase in the cost of living flowing from the scheme.
- Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme.
- Provide assistance to middle-income households to help them meet any overall increase in the cost of living flowing from the scheme.
- Review annually in the Budget context the adequacy of payments to beneficiaries and recipients of family assistance to assist households with the overall impacts of the scheme, noting that these payments are automatically indexed to reflect changes in the cost of living.
- Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills so that all can make a contribution.
- The Government has also indicated in the terms of reference for Australia's Future Tax System Review that it is to consider the interrelationships between the tax and transfer payment systems and the scheme.

As long as support to households takes the form of cash or measures that are not linked to the amounts of specific emissions-intensive products that are consumed (such as electricity or gas), this assistance should not blunt the incentives for households to change their behaviour in ways that result in lower emissions. In relation to fuel, given recent significant increases in global energy prices and the current cost of living pressures facing households, the Government recognises that households already face strong incentives to reduce their fuel use.

Together, these policies will protect the poorest and most vulnerable in society, assist working families, and allow all Australians to contribute to the critical national challenge of reducing greenhouse gas emissions.

8.2 Impacts of the scheme on households

There are several ways in which the scheme will affect households. First, it will change the relative prices of goods and services faced by all households. It will also affect particular groups of households (such as workers in particular industries, or regional communities) directly through changes in production patterns in the economy, and may change the value of companies owned by some households.

8.2.1 Price impacts

All households will face changes in the relative prices of the goods and services that they purchase as carbon prices are incorporated into businesses' cost structures. The precise impact of the scheme on the prices of particular goods will depend on many factors and will change as production practices evolve. However, as a general principle, the prices of goods that are emissions intensive to produce will rise relative to those that are less emissions intensive to produce.

Final decisions on scheme coverage will also affect the ultimate price impacts of the scheme. If the initial coverage of the scheme includes all emissions sources other than those from agriculture and land use, and given the offsetting adjustment to fuel taxes, it is likely that price impacts will initially be concentrated in electricity and gas prices. The prices of other goods will also rise as the carbon price permeates the economy. The extent of the increase will depend on the emissions embodied in the production of the good or service; the extent to which the threat of imports limits the ability of producers to pass through cost increases; and the availability of substitutes.

Sections 8.3–8.4 of this chapter considers in greater detail the potential impacts of the scheme via changes in the relative prices of different goods and services faced by households and examines energy efficiency opportunities that may mitigate these effects.

8.2.2 Impact of structural changes

The demand for goods which are less emissions intensive to produce or which enable firms to lower their carbon footprint is likely to increase. Conversely, demand for goods that are more emissions intensive to produce is likely to decrease. This will induce structural change in the economy, both initially and into the future, opening up employment opportunities in some industries and regions while constraining them in others.

The economy is very dynamic. Even 20 years ago, it would have been difficult for anybody to precisely describe the state of the economy today. In the same way, it is difficult today to precisely predict how structural changes will unfold in the period ahead. The specific shape of the economy will be affected by the global economic environment, other domestic policies, the final design of the scheme, the national cap on emissions and technological developments.

To some extent, these changes in production patterns are not unlike the changes that take place on a continual basis in any dynamic economy. The Australian economy has proven resilient to a wide range of domestic and international shocks in recent decades because its flexible structure allows resources (both capital and labour) to move between industries based on the market's assessment of where they would be most productively employed. This flexibility has enabled a protracted period of strong economic growth, even in the face of sometimes quite difficult global circumstances. Australia is, therefore, well placed to manage changes in production patterns in response to the new challenges posed by climate change – the critical issue is to recognise that a flexible, responsive economy will manage change best and will provide new opportunities for sustained employment and economic growth, and higher living standards.

However, workers and regions are generally less able to diversify their income sources than businesses, so it is appropriate for the Government to provide targeted assistance to address instances where a clear and sizeable burden might be imposed on particular segments of the community, such as a group of workers or a particular region.

While existing structural adjustment measures provide a means to assist affected workers and regions, the Government proposes providing additional support as required through the Climate Change Action Fund and the Electricity Sector Adjustment Scheme. This assistance would be designed to facilitate structural adjustment for individual firms, workers and regions. These proposals are discussed in Chapters 10 and 12.

8.2.3 Wealth impacts

A more diffuse impact of the scheme on households will be through its effect on wealth. The scheme will affect the value of companies, increasing the value of some and reducing the value of others. These changes in value will ultimately flow through to the owners of companies. To the extent that individual households have diversified wealth holdings, the value of some of their assets may increase while the value of others may decrease in response to the introduction of the scheme.

In taking a decision to hold wealth in a particular company, individuals must assess the likely risks and returns to that company. It would be inconsistent with past practice and inappropriate for the Government to provide compensation to households for wealth effects flowing from a policy decision. However, the Government's provision of industry assistance measures, discussed in Chapters 9 and 10, may reduce these wealth effects to some extent.

8.3 Broad distributional price impacts

The overall price impact of the scheme on an individual household's welfare will always be difficult to quantify. It will depend on many factors including:

- the carbon price (or the price of permits)
- the pass through of the carbon price to individual retail prices (that is, the extent to which the carbon costs are reflected in the prices of goods)
- individual consumption patterns
- individual households' levels of disposable income
- the assistance provided to households by the Government to manage the impacts of the scheme
- the ability of households to adjust consumption patterns in response to higher carbon prices. For example, those households with higher disposable incomes can more readily access capital markets to undertake energy efficiency home improvements. This is not necessarily the case for households on lower incomes or with greater debt.

The Government has undertaken preliminary analysis to assess the broad distributional impacts of the scheme on households. This analysis examines the impact of an illustrative carbon price on the price of a wide range of consumer goods and assesses the distributional impacts on households, using available information on the consumption patterns of different household groups.

For illustrative purposes, the modelling is based on a carbon price of $20 per tonne of carbon dioxide equivalent ($20/t of CO_2-e), introduced in 2010–11. Assuming the impact of the carbon price is broadly linear, this implies that a $10 carbon price would have roughly half this effect and a $40 carbon price roughly twice the effect. This is applied to emissions from all sectors currently expected to be covered at scheme commencement, and thus excludes only agriculture and land use emissions. All of the price effects of the scheme on fuel prices have been excluded from this analysis. This reflects the Government's decision to adjust fuel taxes and charges for most fuel users to offset the initial impact of the scheme on fuel prices. In reality, some small pass-through of the price effects on fuel may still occur from off-road use.

The results from the indicative analysis are, overall, judged to represent an upper bound of the average impacts of the scheme on households' real incomes due to the need to make several simplifying assumptions at this stage. The modelling does not allow for any adjustment to income support payments through indexation provisions or any substitution of household consumption patterns in response to the price changes. In reality, households would be expected to reduce their consumption of goods whose relative prices have increased and increase their consumption of goods whose relative prices have decreased. Taking this into account would reduce the real price impact of the carbon price on households.

Enhancements to the models are being made to incorporate new data which have recently become available, in particular updates to the Australian Bureau of Statistics' Input-Output tables, which may affect final estimates.

Table 8.1 shows estimates of the impact of an illustrative $20 carbon price on the retail prices of electricity and natural gas in 2010–11. These estimates represent the average impact, and would vary across states and territories, depending on the emissions intensity of energy sources, underlying energy prices and market. More detailed information on estimated cost impacts will be released later this year when further modelling being undertaken by the Australian Treasury becomes available.

Table 8.1 Projected price effects by commodity, 2010–11

Indicative carbon price $20/t CO_2-e

Commodity	Price impact
Electricity	16 per cent
Gas and other household fuels	9 per cent
All groups consumer price index (CPI)	0.9 per cent

Source: Australian Government internal analysis.

Table 8.1 shows that the most significant price rise is expected to be for electricity. An upper bound estimate of the impact of a $20 carbon price is that electricity prices would rise by around 16 per cent. Upper bound estimates of the impact of a similar carbon price on gas and other household fuel prices are that these would rise by around 9 per cent. More broadly, a carbon price of around $20 is projected to increase the average price of all goods by around 0.9 per cent.

The price impacts will vary across households according to many different factors. Preliminary analysis of the impact across different types of households, based on their composition and principal source of income, is shown in Table 8.2. This suggests that the price impacts may be mildly regressive. Scheme related increases in prices as a proportion of household expenditure on the CPI basket of goods and services are estimated to range from around 1.2 per cent for sole parent households to around 0.8 per cent for high income households. Other studies have found broadly similar results, although some studies find a wider range of price effects between low- and high-income households.[1] It will be important to ensure that such impacts are appropriately and adequately addressed, but this cannot be done with any confidence until scheme design details are finalised and the Government determines the national trajectory for emissions reductions.

Table 8.2 Possible price effects by household type, 2010–11[a]

Household type – primary source of income	Household income quintile[b]					
	All	First	Second	Third	Fourth	Fifth
All	0.9	1.0	0.9	0.9	0.8	0.8
Two income household, no children[c]	0.8	**	1.0	0.9	0.8	0.8
Two income household, with children[c]	0.8	**	0.9	0.9	0.8	0.8
One income household, no children[c]	0.8	0.8	0.9	0.8	0.9	0.8
One income household, with children[c]	0.9	**	0.9	0.9	0.8	0.8
One income single person household[c]	0.9	**	0.9	0.9	0.9	0.8
Self-employed household	0.9	1.0	0.9	0.9	0.9	0.9
Household with primary income source from Commonwealth allowances (e.g. Newstart Allowance, Youth Allowance)	1.0	1.0	1.0	**	**	**
Married pensioner household	1.0	1.1	0.9	**	**	**
Single pensioner household	1.1	1.1	1.1	**	**	**
Sole parent or widow pensioner household	1.1	1.2	1.1	**	**	**
Part-pension and self-funded retiree households	0.8	0.9	0.8	0.9	0.8	0.8

[a] This analysis is based on preliminary modelling. Further modelling enhancements including updated data may affect the results.

[b] Income quintiles rank households from the lowest 20 per cent of total income to the highest 20 per cent. Modified-OECD equivalence scales have been applied to household total incomes to allow for comparisons across households of different sizes.

[c] Principal source of income from wages and salaries.

** Represents those results for which the sample size is too small to produce statistically reliable results.

Source: Australian Government internal analysis.

8.4 Energy efficiency opportunities and challenges

The Carbon Pollution Reduction Scheme will be the Government's primary policy instrument to reduce emissions. The establishment of a carbon price under the scheme will provide incentives for households and businesses to increase energy efficiency, but additional policies to exploit energy efficiency opportunities can also contribute to emissions reductions.

Improvements in energy efficiency have the potential to deliver a significant quantity of emissions reductions in Australia over the period ahead. Research conducted by the former Sustainable Energy Authority of Victoria and, more recently by McKinsey & Company, suggests that many energy efficiency abatement opportunities are available and that these have low costs.[2]

Further, an international comparative study of energy efficiency in eleven International Energy Agency member countries suggests that there may be further opportunities for improving energy efficiency in Australia in light of the achievements of other countries over the past several decades. This study indicated that over the period from 1973 to 2000, Australia achieved around half the rate of energy efficiency improvement compared with the International Energy Agency survey average.[3]

A number of energy efficiency programs are already in place in Australia, and action on energy efficiency is currently projected to reduce emissions from the stationary energy sector by around 30 Mt CO2-e in 2020.[4] These emissions reductions are assessed as primarily coming from minimum energy performance standards for appliances and equipment, and labelling and improved building standards.[5]

While the introduction of the scheme will provide incentives for households and businesses to improve their energy efficiency, a complementary suite of energy efficiency measures can play an important role in contributing to emission reductions.

Expanding and enhancing the range of genuinely complementary energy efficiency policies would have two key objectives. First, it would address market barriers and failures that remain even after the introduction of the scheme and which prevent energy efficiency opportunities from being exploited. These are discussed further in the following section. Second, it would assist households and small businesses in the transition to a low carbon economy, particularly in helping low income households reduce their energy costs.

8.4.1 Market failures and energy efficiency

Even in the presence of the scheme, energy efficiency opportunities may not always be fully exploited. In some cases, this could be because firms and households assess that some energy efficiency opportunities are not worth pursuing. However, in other cases, market failures could mute the price signal conveyed by the scheme to reduce energy demand.

A market failure occurs when a market does not allocate resources efficiently. This may be due to a number of reasons. In the case of energy efficiency, it is likely that the more important market failures relate to:

- information barriers, for instance where property owners, including landlords, are not aware of the energy consumption of their buildings, or household members are not aware of their consumption patterns
- 'bounded rationality', that is, in situations where decisions are complex (or perceived to be complex), individuals may make decisions that do not take into account all available information. This may be because the individuals do not have the time, inclination or ability to fully evaluate the information. For example, assessing the short- and long-term costs and benefits of buying more energy-efficient household appliances may be too complex for many households, but if this assessment was made for them, it could overcome this market failure.
- split incentives, for instance where the costs and benefits (and therefore motivation) of undertaking energy efficiency actions are borne by different individuals. For example, landlords and tenants have different incentives with respect to the benefits of energy efficiency upgrades for rental housing.

and

- positive spillovers, for example where innovations in one field lead to associated benefits in another unrelated field.

In addition, a lack of access to capital markets and liquidity constraints may inhibit some households from upgrading their appliances, cars or other equipment if this involves significant up-front costs and long payback periods.

The diagnosis of market failures and the development of measures to effectively address them is not always straightforward. Often, two or more market failures may interact. For instance, landlords' incentives for energy efficiency improvements might be affected both by insufficient knowledge about energy efficiency opportunities and by the fact that the benefits of any improvements would be conferred upon their tenants.

Addressing market failures requires a careful analysis of the particular nature of the market failure and an assessment of whether there are cost effective ways of overcoming it. Box 8.1 outlines the Garnaut Review's view on the form of some market failures relating to energy efficiency and possible policy responses to them.

Box 8.1
Garnaut Review and market failures

The Garnaut Review identifies a number of market failures that prevent the adoption of low-cost opportunities for reductions in emissions across the Australian economy. These include bounded rationality, split incentives (referred to as the 'principal-agent' problem) and information barriers. It recommends a number of policy options to address these.

The mandatory disclosure of information is suggested to overcome bounded rationality and information barriers. Requiring energy efficiency ratings for appliances is one way to achieve this.

Improving the monitoring and enforcement capacity of principals through contracts is suggested as one way to address 'principal-agent' problems. This is relevant for landlords' powers under tenancy agreements.

Government support in the provision of information about energy efficiency benefits is another way to overcome information barriers.

8.4.2 Assisting households reduce energy costs

There will be an ongoing role for cost-effective Government initiatives that address demonstrated market failures relating to energy efficiency. In recognition of this, the Government has made a commitment that additional support will be provided through the introduction of energy efficiency measures and consumer information to help households and businesses take practical action to reduce energy use and save on energy bills. A discussion of the current policy environment and the development of energy efficiency measures is in section 8.5. Box 8.2 outlines a range of low cost energy efficiency opportunities which are available to households today which can reduce energy use and emissions.

Box 8.2
Household energy efficiency opportunities

An average Australian household generates approximately 13 tonnes of greenhouse gas emissions each year from their direct use of electricity, gas, transport fuels and other household fuels.[6] Emissions are largely generated from domestic activities such as heating, lighting and transport. There are a number of ways households can conserve energy or consume it more efficiently.

Insulation is very important. An uninsulated roof cavity can lose 35 per cent of a building's heat. For uninsulated homes, installing insulation is the most cost-effective way to permanently reduce greenhouse gas emissions, and in many cases could deliver reductions of more than 2.5 tonnes of greenhouse gases per year for the life of the dwelling. Insulation in hot climates can also have cooling benefits and external shading can further contribute to reducing the need to cool houses.

Hot water heating accounts for a significant portion of household energy use – an electric storage hot water system can account for around 30 per cent of electricity use. Upgrading a household's hot water system can deliver significant savings, as can the installation of low-flow devices to taps and showers to reduce the use of hot water.

Lighting the average Australian home costs more than $100 a year and generates more than 750 kg of greenhouse gas emissions. Fitting compact fluorescent light globes will save around 75 per cent in running costs. These globes last around six times longer than incandescent bulbs.

Optimising the use of cars, using alternative transport options and changing driver behaviour can all reduce transport costs and associated emissions.

The energy consumption of appliances also varies considerably. Many appliances now have information labels where energy ratings and running costs can be compared. Considering the running costs over the life of the appliance when making purchasing decisions can deliver long-term energy and emissions savings. While turning appliances off saves energy, switching them off at the power point saves even more as even in standby mode most appliances continue to consume energy.

8.5 Future development of Government commitments

8.5.1 Current policy environment

There are a wide range of climate change related programs administered by all levels of Australian governments. The National Emissions Trading Taskforce's submission to the Garnaut Climate Change Review lists more than 100 climate change programs at the Australian Government and state and territory government levels.[7] Many of these measures are targeted at households to encourage them to reduce their energy consumption and improve energy efficiency.

Several Commonwealth residential energy efficiency programs targeted to address market failures and assist households, including those on low incomes, are under development and will be implemented in 2008–09. Those programs include:

- low-interest Green Loans, to assist families install solar, water, and energy efficient products
- the Low Emission Plan for Renters program, which subsidises the installation of insulation in rental properties
- the expansion of the Energy Efficiency of Electrical Appliances measure, to help families identify the most energy efficient and cost effective appliances for their homes
- the Solar Hot Water Rebate program, to encourage the domestic use of solar and heat pump hot water systems, and the Hot Water System Phase-Out to phase out inefficient hot water systems used in Australian homes
- the One Stop Green Shop, which is a single, user friendly government web portal designed to link schools, businesses and families to household efficiency programs provided by all levels of government.

Recent developments in the climate change policy environment have also resulted in several reviews. The Strategic Review of Climate Change Policies (the Wilkins Review) is assessing whether existing Australian Government programs will complement the scheme.

The Council of Australian Governments' (COAG) Working Group on Climate Change and Water is also tasked with developing a streamlined set of climate change measures across jurisdictions to complement the introduction of the scheme, and options to accelerate the uptake of energy efficiency. At its 3 July 2008 meeting, COAG noted the significant progress being made on the climate change agenda, including measures to accelerate energy efficiency enhancements. COAG also noted the extensive consultations being undertaken by the Commonwealth in relation to the scheme and that all jurisdictions are assessing the complementarity of their existing climate change measures.

In addition, the Australia's Future Tax System Review will be an important factor in any consideration of direct income support measures. Among other things, the review will assess Australian and state and territory government taxes (except the goods and services tax), interactions with the transfer system and the interrelationships between these systems and the scheme. The terms of reference for this Review are provided in Box 8.3.

The work undertaken by these reviews will inform the Australian Government's development of energy efficiency measures and other assistance measures for households.

Box 8.3
Australia's Future Tax System Review

On 11 May 2008, the Treasurer announced a comprehensive review of Australia's tax system to create a tax structure that positions Australia to deal with the demographic, social, economic and environmental challenges of the 21st century and enhance Australia's economic and social outcomes.

The terms of reference for the review state that it will consider:

- the appropriate balance between taxation of the returns from work, investment and savings, consumption (excluding the goods and services tax) and the role to be played by environmental taxes
- improvements to the tax and transfer payment system for individuals and working families, including those for retirees
- enhancing the taxation of savings, assets and investments, including the role and structure of company taxation
- enhancing the taxation arrangements on consumption (including excise taxes), property (including housing), and other forms of taxation collected primarily by the states
- simplifying the tax system, including consideration of appropriate administrative arrangements across the Australian Federation
- the interrelationships between these systems as well as the proposed emissions trading system.

The review panel will be chaired by the Secretary to the Treasury, Dr Ken Henry AC. It will provide a final report to the Government by the end of 2009.

8.5.2 Potential timing for the introduction of household assistance measures

The detailed development and introduction of household assistance measures will occur on an ongoing basis up to and following the introduction of the scheme. This process will be informed by existing review processes and other developments in Government policy. It will also involve specific consultations with relevant stakeholders.

There will be a difference between the initial impact of the scheme on households, which will depend on the carbon price, and households' exposure to the carbon price, which should decrease over time as they adapt and change their behaviour. This has implications for the timing of the delivery of assistance measures.

In the broad, it suggests targeted transitional assistance will be necessary in the short-term and that some assistance will need to start before the commencement of the scheme.

Endnotes

1 The most commonly cited Australian distributional analysis was undertaken by the National Institute of Economic and Industry Research (NIEIR) for the Brotherhood of St Laurence in May 2007. This found that the impact of carbon prices would also be broadly regressive, but with a wider distribution.

2 See, for example: *Sustainable Energy Authority of Victoria, Preliminary Assessment of Demand-Side Energy Efficiency Improvement Potential and Costs*, 2003; and also McKinsey & Company, *An Australian Cost Curve for Greenhouse Gas Reduction*, February 2008.

3 International Energy Agency, *Oil Crises and Climate Challenges: 30 years of energy use in IEA countries*, 2004.

4 Compiled from a variety of sources including: Australian Government, Department of Climate Change, *Stationary Energy Sector Greenhouse Gas Emissions Projections 2007*; National Appliance and Equipment Energy Efficiency Program, *When You Keep Measuring It, You Know Even More About It!* – projected impacts 2005–2020, Commonwealth of Australia, 2005 (5 per cent discount rate scenario). Note that these estimates predate recent emissions trading considerations which may affect future estimates.

5 Department of the Environment, Water, Heritage and the Arts.

6 Based on 2006 data, National Inventory by Economic Sector 2006: http://www.greenhouse.gov.au/inventory/2006/economic-sector.html

7 *National Emissions Trading Taskforce submission to the Garnaut Climate Change Review*, March 2008, Appendix E, pp.277-288. It is worth noting that this list does not include local government measures.

9. Assistance to emissions-intensive trade-exposed industries

This chapter discusses the impact that the adoption of a carbon constraint before key competitors may have on Australia's emissions-intensive trade-exposed (EITE) industries and examines the policy challenges involved in providing those industries with assistance. The chapter also discusses the wide range of practical issues involved in providing assistance to EITE industries. This includes consideration of how, to whom and on what basis the assistance could be provided, both initially and into the future.

The Australian Government has committed to a 60 per cent reduction in national emissions from 2000 levels by 2050. Adopting such a target before some key competitors may mean that Australia's traded industries face higher carbon costs than their international competitors. This would be most significant for EITE industries. The Government has determined that the design of the Carbon Pollution Reduction Scheme will address the competitiveness challenges facing EITE industries.

This chapter discusses the policy rationale for EITE industry assistance and the challenges the Government faces in balancing the concerns of EITE industries with other key design elements of the scheme. The chapter also covers practical considerations regarding the distribution of EITE industry assistance.

The chapter discusses the following issues:

- Section 9.1 outlines the policy rationale for EITE industry assistance and the interactions of this assistance with the broader objectives of scheme design.
- Section 9.2 examines the alternative ways in which EITE assistance could be provided.
- Section 9.3 sets out a basis for determining eligibility for EITE assistance and the breakdown of emissions across traded industries.
- Section 9.4 sets out an appropriate initial quantum of assistance to be provided to EITE industries and its distribution across eligible entities.
- Section 9.5 discusses the basis for calculating EITE assistance, including how baselines for assistance could be determined.
- Section 9.6 outlines a basis on which EITE assistance could be adjusted over time and the extent of future commitments to EITE assistance.

9.1 Principles guiding the development of EITE industry assistance

This section discusses:

- the rationale for EITE industry assistance
- the impact of providing EITE industry assistance on non-assisted sectors in the economy
- the overall principles that could guide the development of EITE industry assistance.

9.1.1 Rationale for EITE industry assistance

The Carbon Pollution Reduction Scheme is a market-based system that is designed to deliver a reduction in the level of national greenhouse gas emissions. It does this by placing a price on carbon emissions, which changes relative prices in the economy and influences the production and consumption decisions of firms and consumers.

All industries will face some change in their cost structures as a result of the introduction of the scheme, with some industries being more markedly affected than others.

In many cases, entities and industries will be able to pass on most of the additional costs resulting from the scheme, and those costs will be reflected in the final price of finished products. The demand for particular goods may then change, depending on how consumers react to the change in prices.

However, this might not be the case for industries that are 'trade-exposed'. In those cases, entities could be constrained in their ability to pass through cost increases because they are price-takers on world markets. The imposition of a carbon cost on those entities and industries would therefore result in a loss in profitability. Such profitability impacts could influence decisions about continued production and new investment in the industry.

Changes in the cost structures of entities and industries are not unusual and occur continuously in a market-based economy; nor is it unusual for Government policy to change cost structures. For example, the adoption of high quality occupational health and safety standards have affected the profitability of Australia's labour-intensive traded industries, making it more difficult for them to compete with foreign producers that are subject to lower standards. Assistance is not usually provided to offset the impact of domestic policies on traded industries, as those policies reflect the priorities and values of the Government and community more generally.

The first best solution to address the competitive concerns of EITE industries would be to develop a comprehensive global agreement under which all major emitters have binding carbon constraints. Effective sectoral agreements for EITE industries would also address these concerns for industries covered by such agreements. However, in the absence of these developments, assisting EITE industries in response to the introduction of the scheme may be warranted on environmental grounds and because it may smooth the transition of the economy.

Other proposed and existing emissions trading schemes have also grappled with the question of assistance to EITE industries. Box 9.1 outlines positions put forward by the Task Group on Emissions Trading (TGET), the National Emissions Trading Taskforce (NETT) and the Garnaut Climate Change Review in Australia, and arrangements in the European Union Emissions Trading Scheme (EU ETS) and the proposed New Zealand Emissions Trading Scheme.

Box 9.1
EITE support in proposed and operating schemes

The TGET and NETT reports and the Garnaut Review support developing special measures for EITE industries on environmental and economic grounds, further details of which are outlined throughout this chapter.

In its free allocations for Phase I and Phase II, the EU ETS has not made any distinction between industries on the basis of whether or not they are emissions-intensive and trade-exposed. However, the European Commission has proposed considering whether this would be necessary during Phase III of the EU ETS scheme, when the scheme may move towards the auctioning of a significant proportion of permits.[1]

In the New Zealand Emissions Trading Scheme, free allocations have been proposed for trade-exposed industries, although final details on allocations and the implementation of the policy have not yet been determined.[2]

The first reason why EITE assistance may be warranted is because the ultimate objective of the scheme is to contribute to reductions in global emissions. If the introduction of a carbon price ahead of key competitors simply resulted in EITE industries contracting in Australia, re-locating offshore and using similar or worse emissions-intensive fuels or technologies, it would weaken Australia's effective contribution to the global emissions reduction effort. This is often referred to as 'carbon leakage'.

The effect on global emissions of a particular industry or entity moving offshore is difficult to determine. If an emissions-intensive entity relocates to another jurisdiction and uses a more emissions-intensive production technology, the move would increase global emissions and result in 'carbon leakage'. This could be the case if an integrated steel mill moved to a jurisdiction that used a production process that was more emissions-intensive than that operating in Australia.

Conversely, if entities that are energy-intensive relocate to another jurisdiction that has a less emissions-intensive energy sector, all other things equal, the move would reduce global emissions. This would be the case if an aluminium smelter, for example, moved to a jurisdiction that only uses hydro-generation to produce electricity.

If Australia was solely concerned about minimising the domestic cost of meeting a reduction in emissions, it would be unconcerned about carbon leakage. However, given the global nature of the climate change problem, the potential for carbon leakage provides a rationale to use policy to influence the locational decisions of emissions-intensive industries on environmental grounds.

It is difficult to determine how much EITE assistance would be needed to prevent carbon leakage. Some have argued that there is a direct relationship between a loss in profitability and carbon leakage, and that Government intervention could be warranted to restore the profitability of EITE entities to levels that would have occurred without a carbon constraint. In the extreme case, and all other things constant, this would imply assistance at a direct dollar-for-dollar rate for the impact of the carbon price. Under such an approach, the Government would continue to provide assistance even if other factors substantially increased the profitability of EITE entities.

This argument is somewhat analogous to past claims that Australia's wage rates deterred investment in Australia and is similarly difficult to sustain. While there is a relationship between the profitability of industries and locational decisions, it is not straightforward. Locational decisions are affected by many factors which vary amongst entities and vary over time. Domestic cost increases can be more than offset by movements in other variables like the exchange rate. Given this, it is quite possible that the introduction of a carbon price could result in changes in the asset values of existing large or fixed investments without changing locational decisions.

However, over time carbon leakage and profit impacts are likely to be more closely related, as material changes in profitability affect re-investment decisions. Because of this, assessing the impact of the carbon price on the profitability of entities may be more important for reducing carbon leakage associated with new investments.

In determining the appropriate degree of support to different EITE industries to reduce carbon leakage, the Government is mindful of the fact that some EITE industries may be viable in Australia in a carbon-constrained world while others may not be. Theoretically, it would be most economically efficient to develop a policy that distinguishes between the two types of industries. However, the long-term viability of industries will depend on many factors about which there is considerable uncertainty. Uncertainties about future technological developments and future international climate change agreements will be particularly significant in this regard. Therefore, while it would be optimal to support production and investment decisions that would occur if key competitors imposed similar carbon constraints, there are serious limitations over the extent to which this would be possible, particularly given the significant changes that are likely to occur in the economy over the next few decades. In short, governments should exercise considerable caution in reaching firm conclusions about the viability or non-viability of particular industries.

The second reason for assisting trade-exposed industries is that it may smooth the transition of the economy towards one that embodies a price on carbon. Given the significant differences between the emissions profiles of industries, a carbon price could have a markedly greater impact on some industries than on others. Government could place a priority on providing transitional assistance to those entities and industries that would be most severely affected by the introduction of the scheme. This would involve giving priority towards assisting existing industries, particularly those with significant 'sunk' capital investments, few opportunities to reduce their emissions profiles and a limited capacity to pass through the carbon cost.

Since the 'carbon leakage' rationale for assistance suggests priority for assistance to new EITE investments and the 'transitional' rationale suggests priority for assistance to existing entities, careful design of the EITE industry assistance policy is necessary to balance the two. In both cases, the carbon price impact must be material (that is, large enough) to raise policy concerns.

On balance, it is the Government's preferred position that the rationale for EITE assistance is to provide assistance to those industries that face the greatest material impact of the carbon cost and that are constrained in their ability to pass through these costs because of international competition. The aim of such assistance is to both reduce carbon leakage and smooth the transition to a low-carbon economy. This rationale suggests that assistance could be provided to both new and existing EITE industries, with assistance being contingent on production, to encourage those industries to continue to produce in Australia following the introduction of the scheme. The provision of assistance must be weighed up against the impact it may have on non-assisted industries and households. These issues are discussed in the following section.

9.1.2 Impact on non-assisted industries and households

The design of the EITE industry assistance policy will have an impact on non-assisted industries and households for two principal reasons:

- First, to the extent that carbon pollution permits are freely allocated to EITE industries, the number of permits that are auctioned will be lower, reducing scheme revenue and the Government's capacity to assist other industries and households.
- Second, assisting EITE industries may increase the emissions reduction effort required of the rest of the economy to reach emissions reduction targets. The size of this impact will depend on the way EITE assistance is provided to industries and on the extent of international linking that is allowed.

If EITE industries were completely shielded from the carbon price, and received assistance directly linked to their direct and indirect emissions liabilities, they would have no incentive to reduce their emissions. However, if EITE assistance were directly linked to production levels but provided on the basis of predetermined emissions-intensity baselines, EITE industries would retain an incentive to adopt efficiency improvements.

In both cases, in the early years of the scheme (during which international linking is proposed to be limited), providing EITE assistance would remove some abatement opportunities, which could increase the carbon price, electricity prices and the cost of the scheme to households.

These factors imply that EITE assistance must be considered in the context of its implications for other sectors of the economy. Potential production changes in EITE industries need to be compared with potential production changes in other sectors for a given scheme design. Similarly, EITE assistance must be weighed up against the potential alternative uses of scheme revenue.

The level of assistance to EITE industries over time must also be balanced against the impact on non-assisted sectors. In particular, the design of the EITE assistance policy needs to take into account the fact that a declining national emissions cap combined with a growing national economy implies that the burden (or cost) of achieving a given national reduction in emissions would increase over time. This suggests that the degree of EITE assistance may need to be adjusted over time to ensure the sustainability of the EITE policy, otherwise EITE assistance would constitute a growing share of a shrinking quantity of national emissions, leading to higher costs for the rest of the economy.

This last point is very important. Over longer-term horizons, the effect of compounding growth means that a high and growing level of support for EITE entities would be unsustainable, potentially affecting the overall credibility of longer-term targets.

TGET recommended that the scheme cap be adjusted for new investments in EITE industries to reduce the implications for other sectors of the provision of EITE assistance. However, once a country has a binding emissions reduction target, adjusting the scheme cap would effectively shift the responsibility for achieving the national emissions reduction target onto other sectors and the Government. Such an approach could compromise the achievement of the Government's commitment to reduce national emissions by 60 per cent by 2050.

9.1.3 Guiding principles for the development of EITE assistance policy

Chapter 1 sets out criteria to judge scheme design options, including that measures should support the competitiveness of traded and non-traded industries, be economically efficient and be consistent with the environmental objectives of the scheme.

The Government's preferred position is that assistance to EITE industries be set at a level that reflects the Government's support for the legitimate concerns of those industries, and aims to be consistent with the rationale for EITE assistance. At the same time, it needs to reflect the competing policy objectives for non-assisted sectors and households. Over time, assistance to EITE industries should be adjusted to ensure that all parts of the economy contribute to the objective of reducing emissions.

The Government proposes to review the EITE assistance policy at each five-year scheme review. The review would consider whether EITE assistance continues to be consistent with the rationale for assistance, appropriately balances the competing policy objectives, and continues to be consistent with Australia's international climate-change and trade obligations.

9.1 Preferred position

The key rationales for providing assistance to emissions-intensive trade-exposed (EITE) industries would be to:

- address some of the competitiveness impacts of the scheme on EITE industries in order to reduce carbon leakage
- provide transitional support to EITE industries that will be most severely affected by the introduction of a carbon constraint
- support production and investment decisions that would be consistent with a global carbon constraint.

The Government's support for EITE industries would be balanced against its objectives for non-assisted sectors and households.

EITE assistance would be adjusted over time to ensure that all parts of the economy contribute to the objective of reducing emissions.

The EITE assistance policy would be reviewed at each five-year scheme review to determine whether that assistance continues to be consistent with the rationale for assistance, appropriately balances the competing policy objectives and continues to be consistent with Australia's international trade and climate-change obligations.

9.2 Form of assistance

Options for providing assistance to EITE industries include:

- exemption of EITE industries from liability under the scheme
- border adjustments, whereby adjustments are made to the prices of traded products to remove the carbon price from exported goods and add a carbon price to imported goods
- an allocation of free permits to EITE industries
- cash payments by the Government directly to EITE industries.

This section analyses these options and assesses them against relevant scheme design criteria (set out in Chapter 1). The criterion of 'Promoting international objectives' requires that measures to assist industries must be consistent with Australia's international trade obligations. These issues are discussed in Box 9.2.

Box 9.2
International trade obligations

Australia is a member of the World Trade Organization (WTO) and party to several free trade agreements (FTAs) and bilateral investment agreements. Domestic policies must comply with our obligations under these international agreements.

WTO and FTA rules contain several basic principles governing trade between countries.

The 'most favoured nation' principle requires that there be no discrimination in trade between partners to a trade agreement, including the WTO and FTAs, and ensures that any favour or privilege extended to one trade agreement partner is extended to all.

The 'national treatment' principle requires that there be no discrimination between the treatment of domestic and imported goods, services and investment. For example, internal taxes or other charges on imports must be no higher than those on domestic products, and laws and regulations affecting their sale, purchase, transportation, distribution or use must be no less favourable.

Subsidies to industries, whether monetary, in-kind or revenue foregone, are financial contributions by government that provide an advantage to those industries in the market. A subsidy may be prohibited or actionable:

- Prohibited subsidies include those contingent on export performance and those with local content requirements.
- Subsidies that are specific to a firm or sector are actionable, provided it can be demonstrated that the subsidies have caused adverse trade effects where the subsidy harms:
  - a domestic industry in an importing country
  - rival exporters from another country when the two compete in third markets
  - exporters trying to compete in the subsidising country's domestic market.

The Australian Government will ensure that the design of the scheme, including EITE assistance policy, complies with Australia's international trade commitments.

9.2.1 Exemption

Exemption is an approach in which emissions from particular EITE industries are excluded from scheme coverage. Those industries would not be required to buy and surrender permits for their direct emissions. Note that exemptions would not assist EITE industries with the increased costs associated with their indirect emissions (that is, those embedded in inputs, particularly the production of electricity).

The advantage of exemption is that it is a simple and administratively straightforward way of ameliorating the direct impacts of the scheme on EITE industries.

The key disadvantage is that it compromises the achievement of a national emissions reduction target. If some industries were exempted from the scheme, total national emissions would still be the sum of emissions from industries under the cap and those from the exempted industries (which would then be unconstrained and hence uncertain). Exempting industries effectively shifts the responsibility for achieving the national emissions reduction target, and the risks, onto non-exempted industries and the Government.

A further disadvantage of exemption is that it would remove from exempted industries all direct carbon price signals and incentives to reduce their direct emissions. This would place a greater burden of adjustment on other industries covered by the scheme, distort resource allocations towards exempted industries at the expense of non-exempted industries, and provide a relative advantage to the less emissions-efficient entities within the exempted industries.

The net effect would be to increase the economic cost of meeting a given emissions reduction target.

9.2.2 Border adjustments

Border adjustment is an approach in which adjustments are made to the export and import prices of goods according to the carbon costs embodied in the goods. The objective is to quarantine the carbon costs imposed on exports to domestic consumers and provide a level playing field for producers of import-competing substitutes.

Border adjustments imply that domestic prices for all emissions-intensive goods reflect the carbon price, which promotes efficient demand patterns. Applying a border adjustment would increase the incentives for households and domestic industries to pursue abatement opportunities as a result.

Border adjustments for exports are no more or less difficult to apply than other forms of EITE assistance. However, they would be considerably more complicated than the exclusion of exports from the goods and services tax (GST). The GST system is designed as a multi-stage income credit system in which businesses are not required to reveal commercially sensitive information, as the amount of GST (for a taxable supply) can be simply calculated from the final price. Attempting to refund the carbon price that is imposed at a single stage would be considerably more difficult.

For imported goods, effective border adjustments would be very difficult to implement transparently. This is because adjustment would require accurate tracking of all inputs used in the production of a 'landed' good to determine both the amount of embedded emissions in that good and the effective carbon price that has been applied to the inputs. For example, it would be highly complex to determine the emissions and carbon cost embedded in an imported finished aluminium product. Accessing reliable and robust data from other jurisdictions is not straightforward, and the complexity of the task is significantly increased when multiple jurisdictions contribute to the production of the good.

Since it would be difficult to make such assessments simple, transparent and verifiable, the risk is that if they were widely adopted, border adjustments could be used to pursue protectionist policies and constrain global trade. This could be very costly for a small, open economy like Australia.

9.2.3 Free allocation of permits

Assistance could be provided to EITE industries to offset the impact of the scheme through the allocation of free carbon pollution permits.

Free allocations can be used to provide an incentive for entities to continue domestic production, as they can be contingent on production. Allocations can also be determined in a way that retains an entity's incentives to adopt more emissions efficient technologies and practices. To achieve these aims, the basis on which allocations are provided should be determined ahead of time and not updated for changes in emissions.

The key advantage of free allocations is that the price of permits moves in line with the carbon cost faced by an entity. Providing assistance in the form of permits eliminates the need for adjustments to the assistance because of changes in permit prices, reducing administrative costs and providing greater business certainty.

The key disadvantage of free allocations is that they may be perceived as lacking transparency. However, to overcome that perception, detailed information on allocations could be made publicly available, including estimates of the value of permit allocations at current prices.

9.2.4 Cash payments

The Government could provide direct financial assistance to EITE industries as cash payments. Cash payments, like free permit allocations, can be linked to production and can preserve some incentives for entities to reduce their emissions, depending on the details of how assistance is provided.

The main advantage of cash payments over free allocations is that they are a transparent way of providing assistance. In particular, cash payments make the quantum of assistance most explicit, ensuring all stakeholders are fully informed of the exact level of assistance provided to EITE industries.

The main disadvantage of cash payments is that they would be based on an estimate of the carbon price. If provided ahead of time, the payments would need to be made on the basis of a forecast carbon price and could require a 'true up' at a later date. If paid at the end of the period, Government would need to determine an average carbon price to be used for allocations which would not necessarily reflect the price paid by individual entities during the period.

Box 9.3
Forms of assistance proposed in Australian scheme models

NETT, TGET and the Garnaut Review have proposed either free permits or cash as the form of assistance to EITE industries.

NETT considered the same options for the form of assistance outlined here, and recommended that the primary mechanism to assist EITE entities be free, annual, up-front allocations of permits.

TGET also recommended that free annual permits be provided to EITE facilities.

The Garnaut Review noted that whether EITE industries receive assistance in cash or free permits is largely immaterial, as long as the cash equivalent of permits is calculated precisely at the time of payment.

9.2.5 Summary of form of assistance

Each of the options discussed have their advantages and disadvantages. On balance, the Government's preferred position is to use free allocations of permits to provide assistance to EITE industries.

A final consideration is whether the free allocation of permits should be provided at the beginning or end of the compliance period. Providing them at the beginning of the compliance period would require a forecast of the level of output of each entity and could require a 'true up' later to account for deviations in output from projected levels. Whether this could be managed simply is discussed further in Section 9.5.4.

If free allocations were provided at the end of the compliance period, the level of output for each entity would be known, however the Government would need to assess how many permits should be held back to be allocated to EITE entities at the end of the period. Allocating assistance in this way would also increase the exposure of entities whose emissions are primarily derived from their use of electricity as these entities wouldn't receive assistance for the increases in electricity prices they face until the end of the compliance period. Overall, allocating at the end of the compliance period would reduce the number of permits in circulation, reducing the liquidity of the carbon market and the efficiency of the scheme.

On balance, the Government's preferred position is that assistance be provided to EITE entities at the beginning of the compliance period.

9.2 Preferred position

The proposed assistance would be provided to emissions-intensive trade-exposed industries in the form of free allocations of carbon pollution permits at the beginning of each compliance period, contingent on production.

9.3 Identifying recipients of EITE assistance

This section discusses how entities that receive EITE assistance would be identified, including:

- whether the identification of entities should be based on an assessment at an industry, company, facility or activity level
- the appropriate metric for identifying emissions-intensive activities
- the assessment of trade exposure
- the process for determining eligibility for EITE assistance.

This section also presents preliminary analysis of the emissions profiles of Australian traded industries.

9.3.1 Basis for assessing eligibility for EITE assistance

Assessment of eligibility and provision of EITE assistance could be carried out at the level of:

- the industry
- the company
- the facility
- the production activity or process (referred to in this chapter as an 'activity-level assessment').

An assessment at the industry level would involve assessing each industry sector against the eligibility criteria for EITE assistance. All entities that are classified as operating within an eligible EITE industry sector would be eligible to receive assistance. A publicly available measure of industry delineation in the economy could be used, such as the Australian and New Zealand Standard Industrial Classification (ANZSIC) codes.[3] Using a widely accepted definition of industry categories would make industry-level assessment more accountable, transparent and simpler.

There are a number of drawbacks to an industry-level approach. First, while classifications such as ANZSIC codes are designed for statistical purposes, they may not be as robust as would be required to delineate between entities for the purposes of a Government assistance policy. In particular, the industry to which a specific entity should be classified is not always clear. Second, a number of different production processes and sub-industries are grouped within a given industry code. Industry-level assessments could confer advantages and disadvantages on entities by virtue of their classification and the level of aggregation chosen. If EITE status were given to all entities within a given industry classification, it could confer an advantage on entities that are not particularly emissions-intensive or trade-exposed but are grouped with other entities that are. The converse could also be possible. Misdirected EITE assistance would reduce the economic efficiency and environmental integrity of the scheme.

Company-level assessment would involve assessing individual companies against the eligibility criteria for EITE assistance. Unlike industry classifications, there are

no generally accepted 'classification codes' for companies. Companies will vary in their structures and production activities. Some undertake a single, clearly defined activity, while others operate numerous production activities across a range of different industries. Companies, like industries, may conduct both EITE and non-EITE activities. Assessment at the company level would therefore be inequitable between companies. It could also distort investment decisions, as eligibility would be determined by the particular circumstances and structure of the company.

Facility-level assessment would involve considering each individual facility against the eligibility criteria for EITE assistance. As there are proposed to be direct obligations with respect to facilities under the scheme, this would appear to be an administratively straightforward option. However, as with industry- and company-level assessments, some facilities will have emissions from EITE and non-EITE activities, and emissions will vary considerably depending on the structure of individual facilities. Providing assistance on this basis could be inequitable both within and across existing industries and could distort decisions about the structure of the facilities and new investments.

Activity-level assessment would involve assessing the different production processes or activities across the economy against the EITE eligibility criteria. All entities that conduct EITE activities that meet the criteria would then be eligible for EITE assistance. (An illustrative example of some of the activities and emissions sources involved in producing aluminium semi-manufactures is provided in Figure 9.1). This would be a more equitable approach, as allocations would not differ because of the particular structure of a facility or company. It follows that it would also be more economically efficient if the allocation methodology did not distort decisions about how to structure different facilities or companies.

This approach would also enable EITE assistance to be accurately targeted, and would be more equitable for non-assisted entities because EITE-eligible entities would still have to absorb the carbon costs of their non-EITE activities. Linking allocations to the emissions from an EITE activity would enable the use of industry-wide allocation methodologies, either when the scheme begins or at a later time (methodologies for calculating assistance are discussed in Section 9.5).

The main challenge in this approach would be the delineation of boundaries around particular activities or production processes. This would require the Government to work closely with industry to determine how production activities can be defined in a way that is consistent with the intent of the EITE assistance policy, equitable across activities, and clear and practical for entities and Government from an implementation perspective.

On balance, the Government's preferred position is that EITE assistance be provided on the basis of production activities or processes, to ensure that assistance is well targeted and equitable within and between industries. Eligibility for EITE assistance would be based on the performance of all entities in Australia conducting an activity.

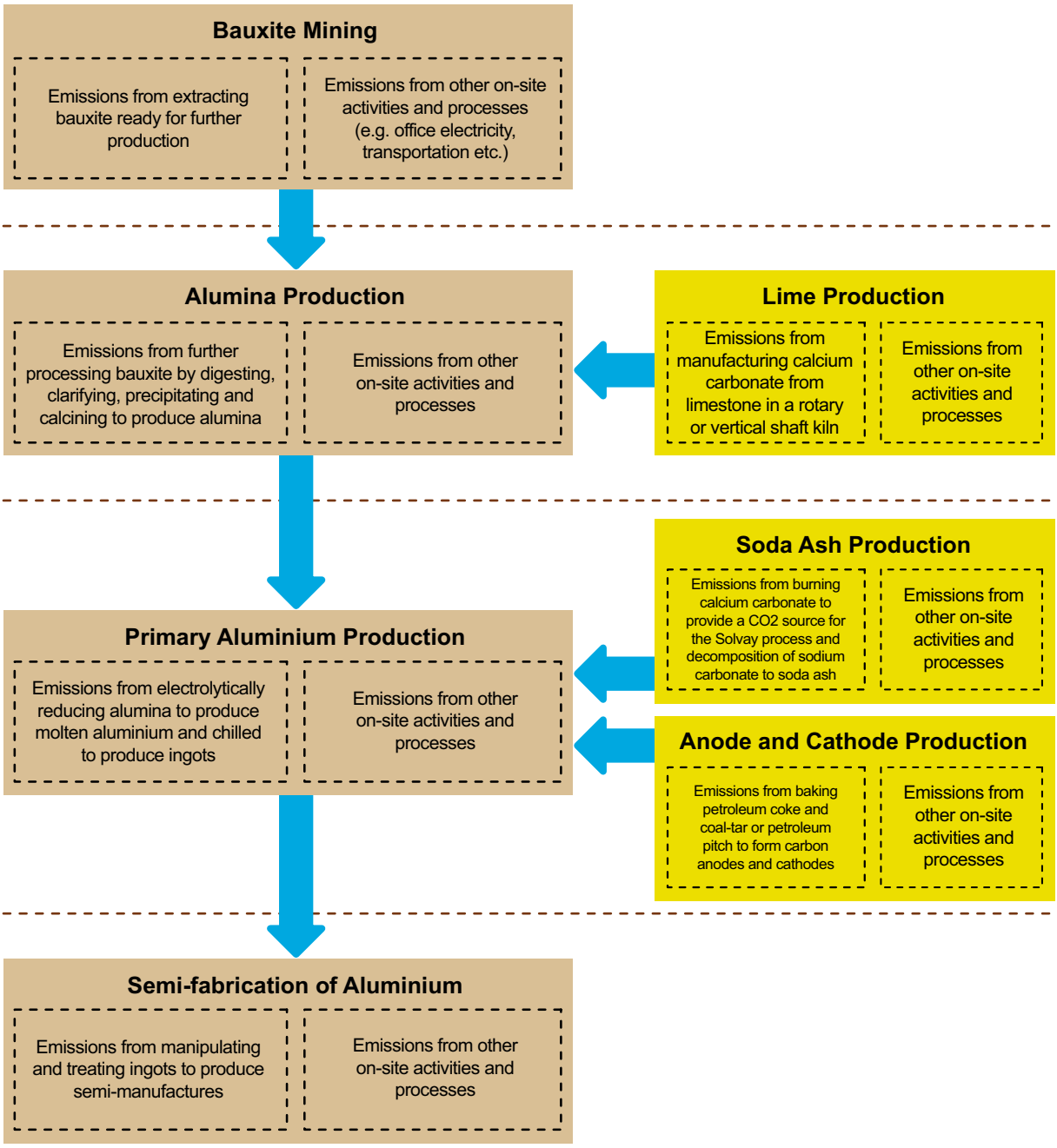
9.3 Preferred position

The proposed emissions-intensive trade-exposed assistance would be provided on the basis of the industry-wide emissions from a process or activity to ensure that assistance is well targeted and is equitable both within and between industries.

Figure 9.1 Illustration of the different activities in the production of aluminium semi-manufactures

The diagram below provides a simplistic illustration of the transformation of bauxite to aluminium semi-manufactures. There are four key stages in the production stream: bauxite mining, alumina production, primary aluminium production and semi-fabrication of aluminium. At each stage, a range of different production activities or processes take place. Some of these stages (and activities) may take place at a single facility, others may take place at multiple facilities. The facility structure can vary from one situation to another.

This diagram illustrates that along a given production stream, there can be a large number of different production processes or activities. The descriptions of the major activities within the aluminium production stream are intended to be illustrative and are by no means conclusive.



9.3.2 Assessing emissions intensity

Identifying EITE activities requires a measure that indicates the 'materiality' of the carbon cost and is consistent, regardless of the output or production process. In the context of the EITE assistance policy, 'materiality' refers to the relative significance of the carbon price in the cost structure of different industries.[4]

The emissions intensity of production is a suitable metric to test the materiality of the carbon cost impact across industries or activities. This is because entities engaged in more emissions-intensive activities would face greater increases in costs when the scheme is introduced and would tend to be more at risk of carbon and production leakage. This relationship is positively correlated: the higher the emissions intensity of the activity, the greater the significance of any given carbon price.

Determining the measure of emissions intensity requires decisions on the emissions to be measured and on how those emissions are to be compared across industries.

Determining emissions to be included in the EITE assessment

An appropriate measure of emissions intensity must incorporate a transparent and verifiable calculation of the emissions associated with a production activity. The measure should only include emissions that would have a material impact. Three broad categories of emissions could be considered in the measure of emissions intensity:

- direct emissions associated with the activity and covered by the scheme
- indirect emissions from electricity generation
- indirect emissions from sources other than electricity, including emissions generated in the production of inputs and pre- and post-production activities.

Direct emissions associated with a production activity could be included in the measure of emissions intensity as they can generally be measured transparently and easily identified as covered by the scheme. The measure of emissions intensity should only take into account emissions that impose a carbon cost. Therefore, an entity's direct emissions that are not covered by the scheme should not be considered in determining eligibility for EITE assistance.

As outlined in Chapter 2, the Government proposes not to include agricultural emissions in the scheme initially. Given this, agricultural emissions would not be considered when assessing eligibility for EITE assistance until they are covered by the scheme. The Government has also expressed a preferred position that emissions from deforestation not be covered by the scheme, so those emissions would not be considered either.

The second category of emissions that could be included in the measure of emissions intensity is indirect electricity emissions. It is straightforward to collect and verify information on the quantity of electricity consumed by EITE entities. From 1 July 2008, all companies with operational control of facilities in Australia with emissions greater than 25,000 tonnes of carbon dioxide equivalent (25 kt CO_2-e) or consuming greater than 100 terajoules (100TJ) of energy per year will be required to report their electricity consumption under the National Greenhouse and Energy Reporting System.

Electricity consumption constitutes a considerable proportion of the costs of some EITE entities, and for those entities the impact of the scheme on electricity prices may be significant. However, determining the emissions associated with the use of electricity and determining the impact of the scheme on electricity prices is not straightforward (see Section 9.5.3).

The inclusion of indirect emissions other than those from electricity generation in the measure of emissions intensity raises additional challenges. As for direct and indirect electricity emissions, non-electricity indirect emissions could be considered if:

- the cost impost from these emissions is material
- carbon costs associated with these emissions are passed through the supply chain
- these emissions can be consistently and transparently measured across production activities.

Preliminary analysis indicates that it is difficult to accurately and transparently measure non-electricity indirect emissions associated with all production activities. While some entities may be able to account for some of these emissions, many would not be able to do so. Further analysis of issues involving non-electricity indirect emissions is outlined in Box 9.4.

The Government's preferred position is that the measure of emissions intensity of activities include direct and indirect electricity emissions from emissions sources covered by the scheme. It follows that assistance to EITE entities would also take into account only those emissions. This approach would be more generous than allocations under the EU ETS, which covered only direct emissions, but would still be practical and transparent.

Box 9.4
Consideration of indirect emissions from sources other than electricity

Examples of indirect emissions other than from purchased electricity include:

- 'upstream' emissions generated in the production of goods purchased or processed by the entity
- 'downstream' emissions associated with transporting and disposing of products sold by the entity
- emissions associated with pre- or post-production activities (for example, the construction of facilities or the restoration of sites on completion of production).

It is difficult to accurately and transparently measure the carbon cost embodied in inputs for different activities. This would require knowledge of the emissions associated with the production of the inputs and whether the inputs were produced in Australia or imported (and what, if any, carbon cost is embodied in imported inputs). Even for domestically produced inputs, analysis would be required of the extent to which the carbon costs were passed on, as some producers of inputs would be less able to pass on costs due to the threat of international competition.

There are also difficulties in equitably and transparently measuring pre- and post-production emissions across entities. For example, it may be difficult to isolate emissions associated with pre-production activities of existing facilities, although it may be possible to do so for new facilities. Providing assistance for these emissions could therefore distort investment decisions.

Provision of assistance relating to non-electricity indirect emissions, whether embodied in inputs or associated with pre- and post-production activities, would be complex, could lack transparency and be inequitable across different activities. The Government is not currently disposed to include these emissions in relation to EITE assistance, but is interested in further consideration of the materiality of these emissions for particular activities (including when the scope of the scheme is expanded) and in guidance on how they could be transparently accounted for across all activities.

Comparing the emissions intensity of different activities

To enable comparisons of the emissions intensity of different activities, the emissions intensity needs to be measured in terms of a common unit of size or value. Possible common units include:

- employment
- value added
- value of production (or revenue).

Using an employment measure would involve dividing the emissions associated with an activity by the number of employees involved in that activity. Employment data are readily available and reliable, but would have a differential effect on activities that have different capital-to-labour ratios.

Using value added in the measure of emissions intensity would involve dividing the emissions associated with an activity by the total value added of the production activity. Value added (either gross or industry-specific) is a comparable concept across activities, but it can exhibit considerable variability within sectors and over time because of variations in the business cycle and the relative economic performance of entities. In addition, calculating value added requires a large amount of information on output levels, product prices, input costs and wages costs, as well as a significant number of additional items. These data would need to be agreed across all entities conducting an activity, as there are currently no widely available activity-level data on value added. Several judgments would need to be made in the collection and analysis of these data, and the collector of the data (that is, the Government) would be at a significant information disadvantage compared to industry, which could lead to disputes about final decisions. Given the significant variation in value added over the business cycle, this approach could also require the collection of emissions- and profit-related data over a number of years to avoid inadvertently benefiting some activities over others.

Using revenue in the measure of emissions intensity would involve dividing the emissions associated with the activity by the total value of production (or revenue) generated by the activity. While revenue also varies over time, it generally exhibits significantly less variability than profits or value added. Calculating revenue of particular activities would only require knowledge of the output of the sector and the traded price of the product produced by the activity. Those data are more readily available and verifiable than the other components that would be required to estimate value added. The main disadvantage of the use of revenue as the common measure is that this would result in lower measured emissions intensities for activities that have more significant input costs (such as those further down the supply chain) and for industries that require a higher return on their capital. If emissions-intensive activities tend to occur early in the supply chain and if the most emissions-intensive activities are highly capital-intensive, this would be a lesser concern.

The Government's preferred position is that a measure of emissions per unit of revenue is the most transparent and comparable indicator of the materiality of the carbon cost impact.

9.4 Preferred position

Emissions-intensive trade-exposed (EITE) assistance would be provided for the direct and indirect electricity emissions associated with the activity or process.

Only emissions covered by the scheme would be considered in determining EITE assistance.

A measure of emissions per unit of revenue would be the most transparent and comparable indicator of the materiality of the carbon cost impact across different traded industries.

9.3.3 Assessing trade exposure

The final element of the EITE assessment requires identifying which Australian industries are 'price takers' on world markets and would be constrained in their ability to pass on carbon costs by actual or threatened international competition. Such industries are said to be 'trade exposed'.

There are several options for assessing the trade exposure of an industry or activity:

- examining trade shares (the proportion of exports and imports relative to domestic production)
- estimating the price elasticities of individual products
- examining correlations between relevant global and domestic prices for goods produced in Australian industries, appropriately adjusted for exchange rates.

Trade shares are often used to gauge the influence of international competition on domestic industries. In assessing the impact of mergers on domestic competition, the Australian Competition and Consumer Commission's (ACCC) Merger Guidelines indicate that imports are likely to provide a competitive constraint on domestic suppliers where imports of substitutable goods represent at least 10 per cent of total sales in the relevant Australian market over the past three years.[5] In applying these guidelines, the ACCC assesses whether imports are competitively priced and there are no barriers to the quantity of imports rapidly increasing in the future. The Australian Bureau of Statistics (ABS) uses a similar approach to delineate between tradeable and non-tradeable goods for the purposes of calculating tradeable and non-tradeable price indexes. This assessment is also based on whether the trade share for the good is above or below 10 per cent.[6]

However, existing trade share data might not accurately reflect the threat of international competition and hence the ability of industries to pass on costs. Some industries, such as cement, produce products that are clearly traded on world markets, although their Australian trade levels may be low, even over a long period. The imposition of a significant carbon cost on those industries could plausibly lead to a significant change in trade patterns.

Estimating specific price elasticities and examining movements between the prices of domestic and comparable international goods would be an alternative way of assessing the relative capacities of industries to pass through cost increases. These are complex exercises subject to numerous assumptions. The Government does not believe that a robust methodology could be developed to conduct such an exercise in a fair and comparable way across a wide range of industries and activities.

On balance, the Government's assessment is that it is not possible to provide a practical, transparent and robust test of the relative capacities of different industries to pass through cost increases. Among the most emissions-intensive industries, however, it is fairly clear that a few industries (such as electricity supply, natural gas and gas supply, and domestic transportation) produce goods specifically for the domestic market and for which there are physical barriers to trade. Most of the other emissions-intensive industries either engage in a significant amount of trade or produce goods that are highly

traded globally; those industries are likely to be constrained from passing on significant cost increases.

The Government's preferred position is that all industries, other than those for which there exists a physical barrier to trade, be considered for EITE assistance. This would reflect the fact that all tradeable industries are somewhat limited in their ability to pass through cost increases, at least over the medium term.

9.5 Preferred position

Emissions-intensive trade-exposed (EITE) assistance would be provided for the direct and indirect electricity emissions associated with the activity or process.

Only emissions covered by the scheme would be considered in determining EITE assistance.

A measure of emissions per unit of revenue would be the most transparent and comparable indicator of the materiality of the carbon cost impact across different traded industries.

9.3.4 The process for determining eligible EITE activities

This section outlines the key steps proposed for determining which production activities would be eligible for EITE assistance under the scheme.

First, in the finalisation of the scheme design, the Government would outline the criteria for eligibility for EITE assistance, including the:

- threshold level of emissions per unit of revenue which activities would need to exceed to receive EITE assistance (discussed further in Section 9.4)
- period over which the emissions intensity of activities would be calculated
- trade characteristics of eligible activities.

The Government would then undertake a formal process to assess the emissions intensity of production activities in the economy and which activities meet the eligibility criteria. Establishing the emissions intensity of different production activities would require collecting data on the emissions per unit of output of an activity and the price of output for the activity. These data would need to be robust, verified and calculated over the same period for all production activities. Box 9.11 at the end of this chapter provides further details of the information sought. The Government proposes that the detail of eligible activities would be prescribed in the scheme regulations rather than the regulator having discretion to decide upon eligibility.

It would be necessary to ensure that the time period selected for determining the emission intensity of activities does not distort incentives for emissions reductions in the lead up to scheme commencement and that it spans a reasonable period of time to reduce the effect of one-off factors and the business cycle on eligibility decisions. Data for the two years before the release of this green paper (2006–07 to 2007–08) could be used to determine eligibility.

Entities conducting activities not prescribed in the regulations would be able to apply to the Government to have those activities assessed against the same eligibility criteria. The assessment would be based on emissions and production data from the same period as used for the activities already listed in the regulations. This is because using a different period could distort emissions reduction incentives and advantage some activities over others.

For production activities that are new to Australia, for which there are no historic emissions and production data, the Government would need to take into account international best-practice emissions performance when assessing eligibility. Scheme regulations would be amended to list additional activities if required.

To maximise ongoing incentives to reduce emissions, the eligibility of production activities should be determined on a 'once and for all' basis. Allowing eligibility to be reassessed after the scheme has commenced could create a disincentive to reduce emissions, as entities would consider the impact of their decisions on potential future allocations of permits.

While the assessment of EITE status would be based on an industry-wide assessment of the emission intensity of production activities, each entity operating an EITE activity would need to apply to the scheme regulator to receive assistance. Chapter 5 outlines the Government's preferred position that entities with operational control over covered facilities or activities (or their controlling corporation) be liable for emissions obligations arising from those facilities or activities. The entity with operational control is generally defined as the entity with authority to introduce and implement operating, health and safety, or environmental policies for the facility. For consistency, EITE assistance could similarly be allocated to the entity with operational control over the eligible EITE activity.

The Government seeks stakeholders' views on:

- the proposed assessment process for establishing the emissions per unit of revenue for different production activities in the economy
- the use of data from 2006–07 to 2007–08 to determine eligibility of production activities
- the entity to which EITE assistance should be provided.

9.3.5 Preliminary analysis of the emissions per unit of revenue of Australian industries

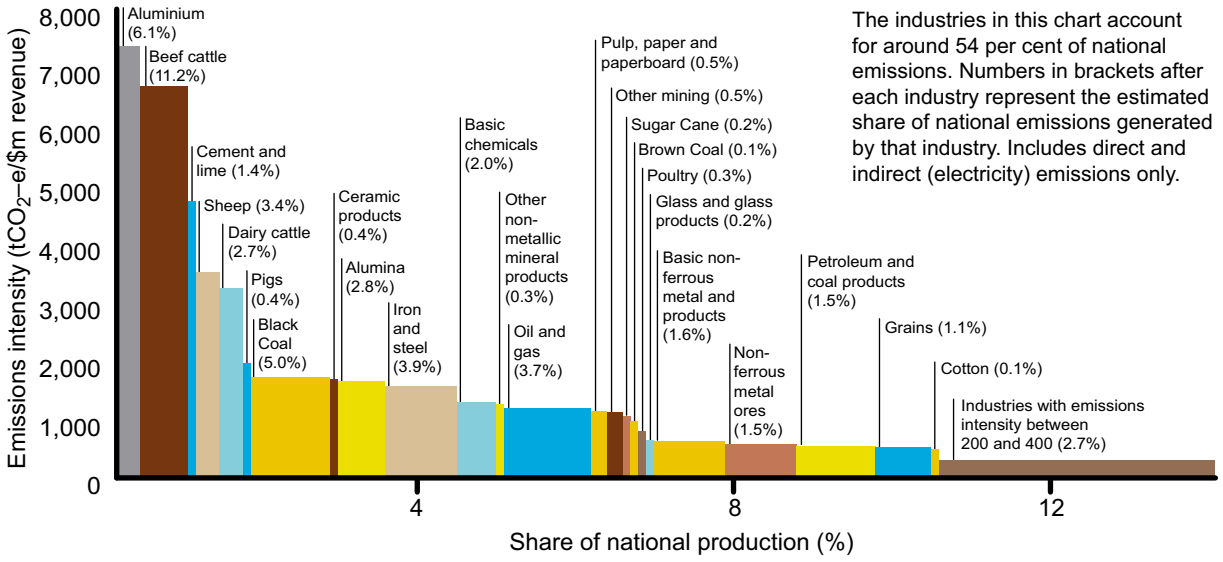
Preliminary analysis of the emissions per unit of revenue of Australian traded industries in 2001–02 is outlined in Figure 9.2.[7] Emissions per unit of revenue is calculated as the total tonnes of CO_2-e direct emissions and indirect electricity emissions attributed to an industry per million dollars of the industry's revenue. Industries are classified according to the ABS Australian National Accounts Input-Output industry sector classification.[8] Four input-output sectors have been further disaggregated. The analysis includes all national emissions included in the National Greenhouse Gas Inventory, except for

deforestation emissions. Further details of the methodology used in this analysis and the numbers underlying Figure 9.2 are provided in Appendix D.

It is important to note that changes in greenhouse gas emissions, production and commodity prices since 2001–02 could significantly affect assessments of the relative emissions intensities of different industries. It is also important to note that these data relate to the emissions intensity of industries not activities or processes.

The data in Figure 9.2 are presented to facilitate discussion with stakeholders. Final decisions on activities eligible for EITE assistance will not be based on these data.

Figure 9.2 Preliminary analysis of the emissions per unit of revenue of Australian traded industries in 2001–02



Source: Centre for Integrated Sustainability Analysis (CISA), University of Sydney, 2008[9]

The analysis in Figure 9.2 illustrates that five Australian traded industries stand out as extremely emissions-intensive compared with the rest of the economy: aluminium; beef cattle; cement and lime; sheep; and dairy cattle. There is then a steady decline in the emissions intensity of industry sectors across another group of moderately emissions-intensive industries, before a further step down in emissions intensity.

The 10 industries with the highest emissions per unit of revenue in Figure 9.2 are estimated to have contributed around 37 per cent of national emissions in 2001–02, and comprise about four per cent of national production, three per cent of employment and 15 per cent of total exports.

While the analysis used in Figure 9.2 is useful as a snapshot of the economy and emissions in 2001–02, it does not provide a complete picture of the impact the scheme would have on different industries. For example, it does not take into account the changes in emissions and production that would potentially occur after a carbon price is introduced.

The 115 broad industry sectors in this analysis contain a multitude of sub-industries and production activities. Within these industry sectors, some activities are likely to be more or less emissions-intensive than the average. For example, in the iron and steel industry, it is likely that the production of raw steel in an integrated steel mill would have a much higher emissions intensity than the iron and steel industry average. Similarly, the production of liquefied natural gas is likely to be more emissions intensive than other parts of the oil and gas sector.

Significant further analysis is needed to identify emissions-intensive production activities or processes in Australia that would be eligible for EITE assistance. A key objective of stakeholder consultations after the release of the green paper will be to further the Government's understanding of the relative emissions intensities of different activities and the quantum of emissions produced by those activities. Further details of the information and data that the Government would welcome from stakeholders during the green paper consultation phase is provided in Box 9.11 at the end of this chapter.

9.4 Initial size and distribution of the EITE assistance policy

Central to the EITE assistance policy is a set of decisions that would together determine the amount of assistance provided to individual entities conducting EITE activities. Decisions need to be taken on the following issues:

- how many permits overall should be allocated as EITE assistance
- which EITE activities should receive support
- how much support should be provided to each entity conducting an EITE activity.

Decisions on these matters are interrelated. For example, if it were decided that a particular list of activities were to receive EITE assistance and that they were to receive assistance to cover all of their emissions liabilities, that would determine the overall initial quantity of permits to be provided as EITE assistance. Alternatively, if it were decided that a smaller quantity of permits were to be provided as EITE assistance, but with allocations made to the same list of activities, that would determine the degree of support that entities operating each activity would receive.

This section discusses the options and considerations involved in making decisions on each of these issues.

9.4.1 How many permits should be allocated as EITE assistance?

Determining the appropriate quantum of assistance to EITE industries will inevitably involve a significant degree of judgment. A higher quantum of assistance would reduce the risk of carbon and production leakage from assisted industries, at the cost of a higher burden on non-assisted industries and households and a higher risk of leakage from non-assisted industries.

The precise quantum of EITE assistance will require careful consideration in light of competing policy objectives. Assessments will be needed of:

- the economic and environmental benefit of shielding EITE industries
- the overall economic cost, and particularly the cost to households, of shielding those industries
- the alternative uses of scheme revenue.

Figure 9.2 shows that there are a few industries that are considerably more exposed to a carbon price than others. The data suggest that for the most emissions-intensive industries, an indicative carbon price of around $20/t CO_2-e would increase costs by around 10–15 per cent. For the next group of industries, it would increase costs by around 3–8 per cent. (By comparison, the analysis in Chapter 8 suggested that such a carbon price could increase household electricity prices by up to 16 per cent.) These impacts are linear, so a carbon price of $10/t CO_2-e would have half these effects and a carbon price $40/t CO_2-e would double these effects.

According to these data, in 2001–02 emissions from industries that would face a carbon cost increase above about 4 per cent at an indicative $20/t CO_2-e carbon price would have accounted for around 25 per cent of national emissions, about 2 per cent of national production and around 2 per cent of national employment at that time.

The impact of the scheme on the profitability of these emissions-intensive entities could be considerable, given their trade exposure. This would increase the likelihood that they would reduce production and postpone or cancel investment plans in response to the introduction of the scheme.

However, as discussed in Section 9.1, it is very difficult to predict the economic and environmental impacts of the scheme and the quantity of assistance that would be necessary to avoid such impacts. Businesses take a wide range of factors into account when making production and investment decisions. It will never be possible to provide a definitive, detailed analysis of which EITE activities (or entities) would move offshore in the absence of assistance, or the degree of assistance that would avoid such decisions, particularly given the risk that other countries will increasingly consider some form of carbon constraint.

Modelling by the Australian Treasury to be published in October will, however, provide a broad indication of the scheme's aggregate economic impact and the impacts on different industries. The modelling will use the best available data on marginal abatement costs and opportunities across different industries and will be conducted for different targets and trajectories.

The Government's preferred position is to provide assistance to EITE entities up to around 30 per cent of total available permits, taking into account the likely allocation to EITE agriculture industries from any eventual inclusion of agricultural emissions in the scheme. This would mean that free allocations at the beginning of the scheme would be up to around 20 per cent of permits.[10] This position is based on partial and preliminary analysis. It reflects an assessment of the materiality of the carbon cost on EITE industries, consideration of the share of the economy that EITE industries comprise, and preliminary judgments about the appropriate distribution of assistance between EITE industries and other sectors, particularly households.

9.4.2 At what level should the eligibility threshold for EITE assistance be set?

The Government believes that EITE industry assistance should be targeted to activities for which the carbon cost impost of the scheme is most significant and material. This requires a decision on a threshold for determining the activities that would be eligible.

NETT proposed that the threshold be set significantly above the average emissions per unit of revenue of all industry sectors (which the taskforce established as 348t CO_2-e per million dollars of revenue) and recommended a threshold of 1,200t CO_2-e per million dollars of revenue as the basis for further consideration. TGET proposed limiting assistance to industries that face a 3½ per cent increase in energy costs at a $20/t CO_2-e carbon price.

The preliminary analysis of the emissions of Australian traded industries in Section 9.3.5 suggests that thresholds at around these levels would provide assistance to industries that generate between 30 per cent and 40 per cent of national emissions.

However, these data are out of date and highly aggregated, and show the emissions per unit of revenue of entire industries rather than particular activities. The global prices of some commodities, such as black coal, have increased considerably in A$ terms since 2001–02, suggesting that at current prices and all other things equal, the emissions per unit of revenue for black coal would be well below the level estimated in 2001–02.

Within industry sectors, there would also be activities that are more or less emissions-intensive than the sector average. For example, it is likely that the smelting of silicon would have much higher emissions per unit of revenue than the 2001–02 other non-ferrous metals sector average of 628t CO_2-e per million dollars of revenue.

A final determination of a threshold for eligibility will need to be informed by more comprehensive information on the emissions per unit of revenue of different EITE production activities. However, based on the available data and analysis and the Government's concern to target EITE industry assistance to the most materially affected activities, the Government's preferred position is to provide EITE assistance to activities for which emissions are above about 1,500t CO_2-e per million dollars of revenue.

Preliminary analysis suggests that such activities include (but would be unlikely to be limited to) aluminium smelting, the production of lime, the production of cement clinker, integrated steelmaking, alumina refining and silicon smelting, as well as some activities in the ceramics, basic chemicals, pulp and paper and other non-ferrous metals smelting industries.

If agricultural emissions were included in the scheme, additional activities that could be eligible for assistance on this threshold could include the production of beef cattle, dairy cattle, sheep, pigs and rice.

A key objective of consultations after the release of the green paper will be to establish the emissions per unit of revenue of different production processes and activities on the basis of the latest available emissions, production and price data to inform the Government's decision on the threshold for determining the activities that would be eligible for EITE assistance. Box 9.11 provides further details of the information that is sought.

9.4.3 How should assistance be distributed between eligible EITE activities?

The Government must also decide on the distribution of a given quantity of EITE assistance across eligible activities. The Government considers that it may not be possible or appropriate to provide entities conducting EITE activities with full cover for the burden of their emissions liabilities for these activities because of the competing demands on scheme revenue and the additional emissions reduction challenge this would place on non-assisted industries and households.

There are two broad options available in this area:

- Option 1: provide initial assistance to a limited set of EITE activities, set at a level that covers most of these activities' emissions
- Option 2: provide a more limited level of assistance to a wider range of activities.

Option 1 would provide comprehensive assistance for the most emissions-intensive activities, but it would increase the likelihood of carbon leakage and production losses in moderately emissions-intensive activities that receive no assistance.

Option 2 would provide a smaller degree of support for a greater number of emissions-intensive activities, but would increase the risk of carbon leakage and production losses from the most emissions-intensive activities.

While the Government could be confident that Option 1 would significantly reduce the likelihood of carbon leakage from the most emissions-intensive activities, it would be less confident that Option 2 would achieve this for the assisted activities. That said, the provision of some assistance must reduce the likelihood of leakage compared with a situation in which no assistance is provided.

Option 2 could be perceived to be more efficient, as many moderately emissions-intensive activities would face material cost impacts from the scheme and may be at least as likely as the most emissions-intensive activities to be viable in a carbon-constrained world. Option 2 may also be more appropriate if it is assessed that even the most emissions-intensive activities do not require comprehensive assistance to avoid carbon leakage.

Both options would require entities (including those conducting EITE activities) to absorb the carbon costs for their emissions from activities that are not classed as EITE, such as office energy use, transportation of inputs and outputs, and non-emissions-intensive manufacturing operations. Option 2 would also require entities to bear a proportion of the carbon cost associated with their EITE activities.

Since option 1 would involve assisting a smaller number of activities it would be administratively simpler and raise fewer implementation risks than option 2. However, the implementation of either option would be challenging—the European experience suggests that any allocation process can be very complex. The identification of eligible EITE activities and the method for distributing assistance will be subjected to intense scrutiny.

On balance, the Government's preferred position is that the EITE assistance be distributed across a wider range of activities (option 2), including highly and moderately emissions-intensive activities.

The Government would then have to decide how to distribute the limited pool of free allocations among the eligible activities. There are two broad options:

- Option 2A: Provide an equal proportion of EITE assistance across eligible activities. For example, if the total allocation of free permits available for EITE assistance is 75 per cent of the emissions from eligible EITE activities, then each activity would receive an initial allocation equivalent to around 75 per cent of its baseline emissions (determining baseline emissions is discussed in Section 9.5.2).

- Option 2B: Require all entities to bear their carbon costs up to a given threshold and only provide assistance for costs above that threshold. To illustrate, if the threshold were set at 1,500 t CO_2-e/$ million revenue and assistance is provided for 100 per cent of emissions above the threshold, then an activity with emissions per unit of revenue around 3,000 t CO_2-e/$ million revenue would receive initial assistance to cover around 50 per cent of its emissions.

Option 2A would be significantly easier to implement than Option 2B, since Option 2B would require an estimate of the proportion of support provided to each EITE activity, on the basis of commonly agreed parameters and methodology.

Option 2B would provide relatively greater allocations to the most highly emissions-intensive activities – those likely to be more at risk of carbon leakage – whereas Option 2A would provide relatively greater allocations to moderately emissions-intensive activities.

Option 2B would require all entities to bear the cost for the same quantity of emissions from the EITE activities, although it could involve providing relatively little assistance to moderately emissions-intensive activities.

On balance, the Government's preferred position is to apply a combination of options 2A and 2B. It proposes to provide initial assistance across activities at two rates:

- at around 90 per cent of baseline emissions for activities that have emissions per unit of revenue above about 2,000 t CO_2-e/$ million revenue
- at around 60 per cent of baseline emissions for activities that have emissions per unit of revenue between about 1,500 and 2,000 t CO_2-e/$ million revenue.

The Government believes that this would provide a significant degree of assistance to highly and moderately emissions-intensive traded activities, would require each group of industries to bear some portion of the carbon cost impost, and would not raise implementation risks significantly. Note that the proposed process for determining baseline emissions for each activity is outlined in Section 9.5.2.

9.4.4 Summary assessment of the quantity and distribution of assistance across EITE entities

On balance, and based on currently available information, the Government's preferred position is that up to around 30 per cent of Australian carbon pollution permits be allocated free to EITE entities. Taking into account the likely allocation that would need to be provided to certain EITE agriculture industries in the future, this would mean that free allocations at the beginning of the scheme would require up to around 20 per cent of permits.

The Government's preferred position is that this assistance be targeted to those activities that have emissions per unit of revenue above 1,500 t CO_2-e/$ million revenue. It would provide free permits for a high proportion of the emissions of the most emissions-intensive activities, while providing significant but lower levels of assistance to moderately emissions-intensive activities.

The Government's preferred position is that initial assistance would be set at around 90 per cent for EITE activities with emissions intensities above about 2,000 t CO_2-e/$ million revenue and at around 60 per cent for those with emissions intensities between about 1,500 and 2,000t CO_2-e/$ million revenue. In both cases, this assistance would require assisted entities to bear some additional costs for both their EITE and their non-EITE activities. Box 9.5 summarises the Government's preferred position and provides examples of the potential activities which may receive EITE assistance at the two assistance rates.

Box 9.5
Preliminary analysis of potential EITE activities and initial assistance rates

Proposed eligibility threshold (tonnes of emissions per million dollars revenue)	**Proposed assistance rate** (initial assistance as proportion of baseline emissions)	**Examples of potential activities***
Activities above 2000	90	Beef cattle production Aluminium smelting Lime production Cement clinker production Sheep production Dairy cattle production Integrated steel manufacturing Silicon smelting Rice production
Activities between 1500 and 2000	60	Pig production Ceramic product manufacturing Alumina refining Parts of oil and gas sector Some basic chemicals manufacturing Some non-metallic mineral product mfg Some pulp & paper manufacturing Some non-ferrous metals smelting
Source: Based on Centre for Integrated Sustainability Analysis (CISA), University of Sydney, 2008[9], updated and supplemented with preliminary data from industry sources where available. * These are indicative only for discussion purposes.		

In this green paper, the threshold figures, proposed rates of assistance, the structure of assistance and the preliminary list of activities that would be covered are indicative only and based on preliminary analysis.

The Government strongly encourages stakeholders to provide any relevant information to inform the final decision, being mindful of the Government's preferred position that all EITE industries should contribute, along with all other sectors and households, to the national abatement task. Further details of the information sought are outlined in Box 9.11.

Information provided through the consultation process that indicates that these thresholds cover a higher (or lower) proportion of national emissions will be taken into account when the Government makes final decisions on EITE assistance. The Government intends to ensure that an appropriate degree of support is provided to EITE activities taking account of the risk of carbon leakage and the emissions reduction effort required of the rest of the economy.

9.6 Preferred position

Up to around 30 per cent of Australian carbon pollution permits would be freely allocated to emissions-intensive trade-exposed (EITE) activities. At the outset of the scheme, if agricultural emissions are excluded from scheme coverage, this would be up to around 20 per cent of permits.

Eligibility for EITE assistance would be based on the industry-wide emission intensity of an activity or process being above a threshold of about 1,500 tonnes carbon dioxide equivalent (CO_2-e) per million dollars of revenue.

Initial assistance would cover around 90 per cent of emissions for EITE activities that have emissions intensities above about 2,000 tonnes CO_2-e per million dollars of revenue and around 60 per cent of emissions for EITE activities that have emissions intensities between about 1,500 and 2,000 tonnes CO_2-e per million dollars of revenue.

These thresholds and rates of assistance may be reconsidered on the basis of further information provided through the consultation process to ensure that the total quantum of EITE assistance is limited to around 30 per cent of permits (inclusive of agricultural emissions).

9.5 Calculating assistance for EITE activities

A methodology is needed for calculating the allocations of carbon pollution permits to each EITE entity. The methodology chosen could strongly influence emissions reduction incentives for existing and new EITE entities. It is important that the methodology:

- maintains emissions reduction incentives for EITE entities, in line with the environmental objectives of the scheme
- be directly linked to the output or production levels of individual EITE entities
- is simple and transparent for administrative efficiency and to minimise implementation risk.

As discussed in Section 9.3.2, the Government's preferred position is to provide assistance with respect to the direct emissions and indirect electricity emissions associated with eligible EITE activities. The differences between direct and indirect electricity emissions mean that slightly different methodologies would be required for calculating allocations for each.

Boxes 9.6 and 9.7 explain the allocation methodologies used in the EU ETS and proposed by the Garnaut Review, respectively.

Box 9.5
Allocation methodologies used in the EU ETS

In the EU ETS each Member State developed a National Allocation Plan (NAP).[11] The NAPs detail the total quantity of permits (called EU allowances) that the Member State intends to issue during the relevant phase of the scheme and how it proposes to distribute those allowances.

Under the scheme rules, Member States had to allocate for free at least 95 per cent of permits in Phase I (2005–2007) and 90 per cent of permits in Phase II (2008–2012).

Most Member States followed a two step process for free allocations.

- First, the total quantity of permits were divided between industry sectors, taking account of the relative sizes and projected growth rates of sectors and reflecting decisions on the rate of assistance to be provided across different sectors.
- Second, the quantity of permits allocated to a particular sector was divided amongst the individual entities in each sector based on their average emissions over a historical three- or five-year period (referred to as the baseline period). Member States selected baseline periods between 1990 and 2003. This approach of allocating permits based on a level of historic emissions is referred to as 'grandfathering'.

Most Member States introduced new entrant rules, closure rules and other 'exception' adjustment rules to account for new entrants and changes in the structures of entities since the base period. In most Member States, allocations for new entrants were based on benchmarks, although the methodology for calculating benchmarks varied widely across Member States.

It is expected that an increasing number of permits will be auctioned in Phase III of the scheme (2013–2020).[1]

Box 9.7
Garnaut Review allocation methodology

The Garnaut Review preferred approach for allocating assistance to EITE entities attempts to mimic the demand and supply conditions expected in a world with a comprehensive carbon constraint.

Under this approach, assistance to an entity is calculated as the product of the expected increase in world prices of the EITE good due to the adoption of a global carbon constraint and the expected level of production of the entity in this situation. However, in its Draft Report, the Garnaut Review acknowledged that information asymmetries may hamper the implementation of this approach.

If a simpler approach is to be adopted, the Garnaut Review considers that it must:

- ensure incentives to pursue abatement opportunities exist
- provide assistance at a similar rate for firms in the same industry
- encourage the adjustment process for EITE entities to adjust to a carbon constrained future.
- The Garnaut Review advocates that the simpler approach should involve providing assistance to the process rather than the industry with eligibility thresholds measured by the ratio of the value of direct and indirect emissions compared to the sales revenue for a process. It advocates that assistance should be provided to those industries above a threshold set at a level above which the industry impost from the carbon price would represent an unreasonable shock and provided for costs in excess of the threshold.

9.5.1 Overall methodology for calculating allocations

The Government's preferred position is that allocations be directly linked to the output or production levels of individual entities. Initial allocations to EITE entities would be calculated using the following formula:

$$A_{ia} = \underbrace{k_a\left(EI_{ia}^{d} \times O_{ia}\right)}_{\text{Allocations with respect to direct emissions}} + \underbrace{k_a\left(EI_{ia}^{e} \times EF \times O_{ia}\right)}_{\text{Allocations with respect to indirect electricity emissions}}$$

where:

- A_{ia} = allocation of permits to entity i for emissions associated with activity a
- k_a = assistance rate for activity a, representing the degree of assistance provided to entities for this activity both initially and over time
- EI_{ia}^{d} = direct emissions-intensity baseline for entity i conducting activity a (that is, baseline level of direct emissions per unit of output for the activity)

- EI^{e}_{ia} = electricity-intensity baseline for indirect electricity emissions for entity *i* conducting activity *a* (that is, baseline level of electricity per unit of output for the activity)
- *EF* = electricity factor, which reflects the impact of the carbon price on the price of electricity
- O_{ia} = output of activity *a* by entity *i*

The setting of the initial level of the assistance rate, k_a, is discussed in Section 9.4.3 and the adjustment of this rate over time is discussed in Section 9.6.1.

Decisions are required on the process for determining the other variables in this formula. The rest of this section discusses options related to the determination of:

- emissions-intensity baselines for direct and indirect emissions, including
  - whether the same baseline is used for all entities conducting an activity
  - determining the time period of data to calculate the baseline
  - determining whether baselines remain constant over time or are updated
- the electricity factor
- the output for individual EITE entities.

Note that the formula for calculating assistance to EITE entities is based on emissions per unit of output (not emissions per unit of revenue) and the level of entity output. Allocations would not vary with changes in commodity prices.

9.5.2 Establishing emissions-intensity and electricity-intensity baselines

Emissions-intensity and electricity-intensity baselines would need to be established for calculating allocations to all EITE entities. These could be:

- entity-specific baselines

or

- industry-wide baselines.

The first option would involve using a different, entity-specific, baseline to calculate allocations to each entity undertaking the EITE activity. Each EITE entity's baseline would be established based on its individual direct emissions or electricity use per unit of output in a specified period. It would be preferable for the baseline to be taken from a past period to ensure that EITE entities face incentives to reduce their emissions in the lead-up to the commencement of the scheme and to prevent entities manipulating production (or emissions) to maximise allocations.

Using an entity-specific baseline raises issues in relation to allocations to new entities, as they will not have historical data. If new entities' baselines were related to their actual emissions intensity or electricity intensity per unit of output, it could reduce incentives for them to invest in the least emissions-intensive technologies and fuel sources.

Industry-wide baselines would involve developing a single baseline for each EITE activity to be applied to all entities undertaking the activity. The baseline could be either:

- a best-practice benchmark baseline (based on Australian or world's best practice)

or

- an Australian industry average baseline.

Establishing a best-practice benchmark baseline for each activity would involve identifying the most efficient entity, and setting the baseline equal to the emissions or electricity-intensity per unit of output from that entity. This benchmark could be based on a global assessment of best practice or Australia's best performing entity.

Experience elsewhere in developing best-practice benchmarks demonstrates that this can be a complex, contentious and time-consuming process.[12] Governments face significant information barriers, particularly in accessing the latest and most accurate data on which to base best-practice benchmarks. Information constraints may be easier to overcome if an Australian best-practice approach were adopted.

An industry-average baseline would involve establishing the average emission or electricity-intensity across all entities conducting an EITE activity in Australia. As with entity-specific baselines, it would be preferable for the baseline to be calculated using data from a past period, however, given that these data are to be averaged across entities, the use of a shorter time period may be more acceptable.

An industry-wide baseline (whether a best-practice benchmark or industry average) could equally be applied to new and existing entrants. This approach avoids any complexity in determining the difference between allocations to 'existing' and 'new' entities, as might occur with entity-specific baselines.

The key advantage of using Australian average industry-wide baselines as opposed to best-practice benchmarks is that they would be more straightforward to implement. They would be more generous to existing entities.

The benefits of using industry-wide baselines as opposed to entity-specific baselines are that industry-wide baselines would provide the strongest incentive for less efficient plants to improve their emissions intensity or electricity intensity and provide a relative benefit to more efficient plants. In some circumstances, industry-wide baselines may benefit those entities that undertook early abatement action. The use of industry-wide baselines would considerably simplify the determination of baselines and hence allocations. It would also simplify the determination of allocations to new entrants.

A drawback of industry-wide baselines is that they would provide relatively less support to less efficient plant and they may result in an overallocation to relatively efficient entities, particularly in industries in which there is wide variability in emissions intensity or electricity intensity. This could lead to 'windfall' gains. However, since it is proposed that initial allocations be at 60–90 per cent of initial emissions levels and that the rate of assistance reduce over time (as discussed in Section 9.6), the likelihood of significant 'windfall' gains is small.

On balance, the Government's preferred position is that Australian historical industry-average baselines for each EITE activity be used to calculate allocations for direct and indirect electricity emissions for new and existing EITE entities.

This approach has the potential to provide a windfall gain to new entities if existing Commonwealth, state and territory environmental emissions obligations mean that they are required to operate at a lower emissions intensity than the new investment emissions-intensity baseline. The Government wishes to consider this issue further before making a final decision on how such obligations are treated.

The Government seeks stakeholder views on the period on which emissions- and electricity-intensity baselines should be established. One option would be for the same period to be used to determine eligibility and emissions- and electricity-intensity baselines. This would imply that baselines be determined on the basis of emissions and output in the two years prior to the release of this green paper (that is, 2006–07 to 2007–08).

The Government seeks stakeholder views on whether baselines for allocations should be based on emissions and output data over the period 2006–07 – 2007–08

9.5.3 Electricity factor

Allocations for indirect electricity emissions are complicated as EITE entities will not generally face an emissions obligation for the emissions associated with their electricity consumption. Instead, they will face an increased price of electricity passed through the electricity supply chain.

The 'electricity factor' (*EF* in the formula for calculating assistance outlined above) is designed to relate the increase in electricity price faced by EITE entities as a result of the scheme to the price of permits.

Determining the increase in electricity prices as a result of the scheme is not straightforward. The increase in electricity prices will vary between EITE entities for several reasons.

EITE entities' contractual arrangements for their electricity supply may or may not include provisions for pass-through of the carbon price. The Government's preferred position is that allocations for indirect electricity emissions take into account whether EITE entities have contractual arrangements which affect the increase in electricity prices that they would face as a result of the introduction of the scheme.

Increases in electricity prices will vary by location in Australia and from hour to hour, depending on:

- the demand for electricity
- the average emissions intensity of electricity generators
- the emissions intensity of the marginal electricity generator (the generator that sets the price at a particular point in time)

- supply constraints (that is, constraints between different regions in the National Electricity Market that prevent importation of electricity from lower cost regions)
- new investment in the electricity market and the resource costs of new entrants.

These factors will vary over time as the scheme drives changes in the emissions intensity of the electricity supply sector. This means that no single methodology would provide a level of assistance precisely calibrated to the electricity price increase faced by an EITE entity. Even after the fact, it will be very difficult to distinguish price impacts resulting from the scheme, as the 'counterfactual' (the price in the absence of the scheme) could never be known.

There are three considerations for setting the electricity factor:

- whether there should be a single factor or multiple factors for different areas, states or regions
- the method for estimating the impact of the scheme on electricity prices
- whether the factor should be set up front and fixed, or updated over time.

Treatment of electricity from co-generation facilities and off-grid electricity generators would need to be given separate consideration. As above, the intent of the methodology would be to reflect the average electricity price increase over time related to the introduction of the scheme. However, it would also be very important to ensure that the method for calculating the electricity factor in these circumstances maintains incentives for shifting to less emissions-intensive sources of electricity generation for both existing and new EITE entities.

The Government's preferred position is that the electricity emissions factor would be determined to reflect the likely average electricity price impact of the scheme. A focus of stakeholder consultation will be to further explore options for the calculation of the electricity emissions factor.

The Government seeks stakeholder views on the electricity factor to be used in calculating allocations for indirect electricity emissions and how it can be robustly and transparently calculated.

9.5.4 Measuring Output

The proposed form of EITE assistance is an up-front allocation of free permits to EITE entities. This would require the use of an estimated level of output of each entity in the methodology for calculating allocations. There are two options for estimating output.

The first option is to base allocations on a forecast of each entity's output each year and 'true up' allocations at the end of the year. The true up would adjust the entity's allocation for the next period to take account of deviations between actual and projected output in the previous year.

The advantage of this approach is that it would match allocations more closely to expected production levels of the entity from year to year. The key disadvantage of a true

up is that it would increase the administrative complexity of EITE industry assistance. The scheme regulator would be required to forecast the level of output for every eligible EITE each year, and conduct a true up of the allocations at the end of every year. A possible requirement that EITE entities return excess allocations at the end of the year may also lead entities to hold on to excess permits 'just in case', which would reduce the liquidity of the market.

The second option would be to simply base allocations on the entity's output from the previous year. This would be an administratively simpler option. In the first year of the scheme, given that output in the previous year would not have a carbon cost imposed, there is some potential for EITE entities to increase their allocations by increasing output in the year before the scheme's commencement. To minimise this risk, allocations for the first year of the scheme could be based on either:

- the annual productive capacity of the plant

or

- the average level of production over the past several years before scheme commencement.

The main disadvantages of this approach are that it would require entities to manage variations in their allocations relative to their emissions liability from one year to the next and it would provide overallocations (or underallocations) to entities that are contracting (or expanding) over a number of years.

The Government seeks stakeholder views on the approach for estimating the level of output used to calculate assistance to EITE entities.

9.5.5 Cessation of EITE activities

As it is proposed that allocations to EITE entities would be made at the beginning of each compliance period, consideration needs to be given to situations in which an entity that ceases an EITE activity during the year.

When an entity ceases an EITE activity mid-year and therefore produces lower output than expected when their allocation was calculated, there is no possibility of reconciliation in the following year because no permits would be allocated to that entity. A process would be required to minimise the possibility of overallocation to entities that close.

The Government's preferred position is that, should an EITE activity cease to operate, the EITE entity would be required to return permits that had been allocated above actual production levels in the year it closed. All allocations to EITE entities would be made conditional on continued output, and allocations that relate to expected output that has not occurred would have to be returned to the scheme regulator.

In general, entities would be aware that an activity is to be closed down in a particular year and could make provision for this by retaining a number of permits equivalent to the likely number that would have to be returned. If the entity did not retain enough permits, it could buy the shortfall on the market to make up the difference.

9.7 Preferred position

Allocations of assistance for direct emissions of new and existing emissions-intensive trade-exposed (EITE) entities would be calculated on the basis of:

- an Australian historical industry-average emissions-intensity baseline for each EITE activity
- the output of the EITE activity for each entity
- the assistance rate for that EITE activity.

Allocations of assistance for indirect electricity emissions of new and existing EITE entities would:

- be calculated on the basis of
  - an Australian historical industry-average electricity-intensity baseline for each EITE activity
  - an electricity factor, where the electricity factor is determined to reflect the likely average electricity price impact of the scheme
  - the output of the EITE activity for each entity
  - the assistance rate for that EITE activity
- take into account whether the EITE entity has contractual arrangements with regard to electricity supply that would shield them from increases in electricity prices as a result of the introduction of the scheme.

If an entity ceases operating an EITE activity, it would be required to return carbon pollution permits that had been allocated to it for production that did not occur.

9.6 Assistance to EITE entities over time

The Government's commitment to providing assistance to EITE industries is based on a rationale that is, by definition, transitional. This section discusses how assistance to EITE industries could be adjusted over time to ensure that they contribute to the national abatement effort, and how and under what circumstances assistance to them would be phased out.

9.6.1 Adjusting the level of allocations to EITE entities over time

There are five broad options for adjusting the provision of support to EITE entities over time. The assistance rate could be:

- held constant
- reduced by a factor reflecting efficiency opportunities
- reduced by a factor reflecting EITE growth rates
- reduced by a factor reflecting the committed decline in the national target and the projected growth rate of the EITE sector as a whole
- reduced by a factor that implies a phase-out of EITE assistance over a given timeframe.

The first option is that EITE entities be provided with a fixed level of assistance per unit of output over time. Assuming that EITE entities grow over time, this would result in the share of permits being allocated to them increasing, while the share of scheme revenue available for other purposes falls. This would also result in an increasing adjustment burden being borne by non-assisted sectors and households. This approach would increase the effective level of assistance provided to EITE entities over time, as most of those industries have some abatement opportunities. The Government's assessment is that this option would not be defensible or sustainable.

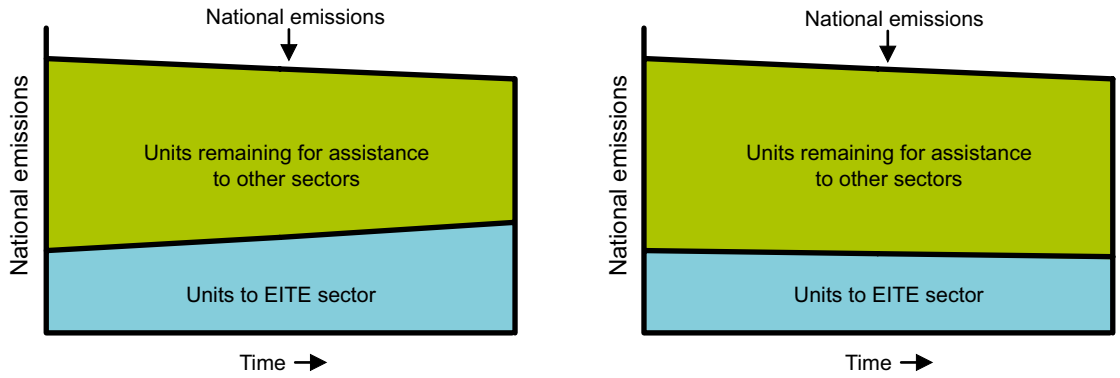
The second option is that assistance could be linked to an achievable efficiency benchmark, which could be entity-specific, activity-specific or applied to the EITE sector as a whole. The efficiency factor could be related to efficiency opportunities or based on an assessment of best-practice production processes. In this case, the level of assistance per unit of output provided to EITE entities would fall each year by the efficiency benchmark. This would partly address some of the problems identified with the first option, depending on the size of the efficiency benchmark and abatement opportunities available in non-assisted sectors. However, on the basis of historical improvements in emissions efficiency it would imply a relatively small reduction in assistance to these entities over time. It would be likely that the share of permits provided to the EITE sector would increase over time, increasing the adjustment burden on non-assisted sectors and households.

The third option is that assistance per unit of output could be reduced by an expected growth rate, which could be entity-specific, activity-specific or EITE sector-wide, so that the level of allocations to the EITE sector would be held roughly constant over time. If

applied at an entity or activity level, this approach would imply a larger reduction in emissions per unit of output for strongly growing entities and industries.

The fourth option is to calibrate assistance to EITE entities so that the share of assistance provided to the EITE sector does not increase significantly over time. This would imply that EITE entities broadly share in the task of meeting the national emissions reduction commitment and would reduce the additional burden that is shifted to non-assisted sectors. It would enable assistance to continue to be linked directly to output, imply that all entities receiving assistance face the same reduction in the degree of assistance per unit of output that they are receiving, and would not penalise strongly growing entities and industries. This approach would have a more adverse impact on entities and industries that have relatively fewer abatement opportunities, although this is a general feature of the scheme and not confined to EITE entities.

Figure 9.3 An illustration of how allocation methods may affect burden sharing over time



These graphs illustrate the implications of two different options for adjusting the assistance rate for allocations to EITE entities through time.

In the first graph, it is assumed that the level of assistance per unit of output provided to EITE entities is held constant over time (option 1, above) and that the EITE sector grows at a similar pace to the rest of the economy. In this case, the share of permits provided to the EITE sector increases and the share of auction revenue available for other purposes reduces over time. This approach may also increase the adjustment burden placed on non-assisted sectors and households.

In the second graph (option 4), the assistance rate for EITE allocations is calibrated so that the share of assistance provided to the EITE sector does not increase significantly over time. In this case, the number of permits provided to the EITE sector as a proportion of total permits in the scheme remains the same as does the share of permits available for other purposes.

The fifth option is to reduce assistance to EITE entities according to an up-front timetable, so that assistance is withdrawn to a given timetable, say 20 years, in a way which broadly reflected the expected evolution of a global emissions reduction agreement. This would be the most simple and transparent approach, but its main drawback is that significant uncertainty exists over the likelihood and timeframe for the negotiation of such an agreement. This option would not necessarily effectively address the carbon leakage rationale for assistance and it could be problematic if assistance was continued when the underlying rationale for assistance was no longer there.

On balance, the Government's preferred position is that the degree of assistance be reduced over time at a pre-announced rate, with the intent that the share of assistance provided to the EITE sector does not increase significantly over time. The Government believes that this is the way it could most effectively balance the competing priorities of the EITE sector and other non-assisted sectors (including the needs of households) over time.

9.8 Preferred position

The emissions-intensive trade-exposed (EITE) assistance rate would be reduced over time with the intent that the share of assistance provided to the EITE sector does not increase significantly over time.

The precise details of the adjustment of the assistance rate would be determined after further consultation with industry, informed by the modelling being undertaken by the Australian Treasury, and after decisions about the trajectory have been made. It is likely to take into account the following elements:

- the reduction in the scheme cap
- the projected growth in the national economy
- the projected growth of the EITE sector.

Some background parameters relevant to each of these elements are provided in Box 9.8.

The adjustment could be applied by reducing the assistance rate for all activities by the same proportion, or it could be applied by reducing the assistance rate being provided to different industries (that is, the proposed 60 per cent or 90 per cent rates) by a given number of percentage points each year.

The Government welcomes stakeholder views on how the proposed EITE assistance rate should be adjusted over time.

Box 9.8
Background parameters relevant to the determination of the adjustment of the EITE assistance rate

In determining how support to EITE entities should be adjusted over time, a number of factors will come into play. Relevant background parameters are as follows:

- Average growth in the Australian economy. Annual GDP growth has averaged around 3.3 per cent over the past 17 years. The reference case in the Garnaut-Australian Treasury's climate change modelling exercise projects average annual growth of around 3 per cent for the decade to 2020.
- Growth rates in EITE industries. Over the past 10 years, the average annual growth rates of potential EITE industries have varied widely. Future growth will be determined by a large number of factors and will depend on the activities and processes determined to be eligible for EITE assistance and the degree of assistance provided to those activities.
- National emissions efficiency improvements. The greenhouse gas emissions intensity of the Australian economy (excluding land use, land-use change and forestry), expressed as emissions per dollar of GDP, has declined over the period from 1990 to 2006 by an average of 1.75 per cent a year.
- Energy-efficiency improvements available to EITE sectors. Energy-efficiency improvement rates are hard to determine and vary from one entity to another. Energy-efficiency opportunities are often presented as around ½ per cent to 1 per cent per year.
- Annual change in emissions under different national trajectory scenarios. While decisions about the medium-term national target range will not be made until the end of the year, a range of 2020 targets could be considered.

The table below illustrates annual changes in national emissions and national emissions per unit of output for historic periods and illustrative 2020 targets. It provides an indication of the degree of adjustment required of the economy to reach alternative targets.

	Annual change in emissions	Implied annual change in emissions per unit of output (%)	Implied 2020 emissions target (% of 2000 levels)
1990–2005	+1.5%*	-1.75%*	
2005–2010 (Kyoto projections)	+1.8%*	-1.35%*	
2010–2020	+2%	-1%	132
Illustrative targets	0	-3%	108
	-1%	-4%	98
	-2%	-5%	88
* Calculations exclude land use, land use change and forestry emissions			

9.6.2 Phase-out of EITE industry assistance

A further issue associated with assistance to EITE entities is the basis and criteria for the complete phasing out of EITE assistance over the longer term. The Government must balance the need to retain flexibility to revisit EITE assistance policy in light of international developments against the importance of providing predictability on the level and duration of EITE assistance to industry.

Box 9.9 outlines Australian proposals and international practices for phasing out EITE industry assistance.

There are three broad options for determining when EITE assistance should be withdrawn:

- withdrawn when comparable carbon constraints are applied in Australia's key competitor economies
- withdrawn when acceptable international action occurs that places obligations on Australia's key competitors
- a fixed up-front timetable for phasing out assistance.

The first option would provide the strictest criteria for the removal of assistance. Variations on this approach were proposed in the TGET and NETT models of assistance to EITE industries. However, none of those models provided specific details on how this would be implemented. They also provided limited discussion of the implications of this approach in the presence of a fixed national emissions cap.

In some circumstances, implementation of this model would be straightforward. For example, if a sectoral agreement were concluded that imposed binding constraints on the global emissions from an industry, it would be clear that comparable constraints were being applied (more information on sectoral agreements is outlined in Box 9.10).

However, applying this option more generally would be problematic. No jurisdiction has attempted to calibrate assistance based on assessments of comparable carbon constraints. This is an inherently complex task, and invites protracted debate about whether and how many key competitors have introduced carbon constraints, and the extent to which they are comparable. The consistency of this approach with the Government's international climate change strategy would also have to be carefully considered.

Box 9.9
Other proposals on the phase-out of assistance

The TGET and NETT models proposed ongoing, but declining, support to EITE sectors until evidence emerges that a comparable carbon constraint is in place in key competitor economies. The TGET model proposed that allocations be moved to world's best practice benchmark levels for all entities possibly at the end of the first review period, while NETT proposed that a similar approach be taken after 10 years. These models recommended that support remain in place until it is assessed that comparable carbon constraints have been put in place in key competitor economies. This was to be assessed at the five-year review points.

In the first two phases of the EU ETS, assistance was not specifically provided to industries at risk of carbon leakage and it was not generally linked to production levels. While allocation methodologies varied among member states, most adopted a grandfathering approach for the level of allocations. This resulted in declines in allocations per unit of output for most entities, although complex new entrant, closure and transfer rules meant that the precise impact was often difficult to determine in practice.

The European Commission has proposed that in Phase III of the EU ETS assistance through free allocation be phased out by 2020 for all sectors except those deemed to be facing a risk of carbon leakage.[13] For those industries, ongoing assistance would be assessed in light of the outcome of international negotiations and taking into account any binding sectoral agreements that may have been concluded. The European Commission proposes to announce in 2011 the method of assisting industries at risk of leakage, if this is considered to be warranted.

The New Zealand Government has proposed that the level of allocations to entities be held constant at 90 per cent of 2005 levels from 2011 until 2018, and then reduced to zero by 2030.[14] This implies that allocations per unit of output would decline at the rate of growth of output for the entity to 2018 before declining more sharply to 2030.

The second option would be to link decisions about withdrawal of EITE industry support to the introduction of acceptable international action that places obligations on an industry's major international competitors. While such a situation would not necessarily imply that comparable carbon constraints are being applied across our competitors, it would indicate considerable progress towards that end. An international agreement of this nature would also reflect the Government's assessment of the appropriate distribution of a carbon constraint between Australia and the parties to the agreement.

Box 9.10
Sectoral agreements

Some have proposed that agreements could be negotiated that limit emissions on an industry or sectoral basis. This would require the agreement of all major global producers within an industry or sector on the framework for the agreement, including both the imposed constraint and the mechanism by which it would be enforced. If such an agreement put in place a comparable carbon price across all major global producers, it could possibly address the competitiveness concerns of such a sector, resulting in a level playing field with respect to the carbon price.

While sectoral agreements could possibly achieve goals outside the multilateral climate change negotiation framework for particular emissions-intensive industries, to this point there has been no major sectoral agreement that would be equivalent to a global carbon constraint for that sector.

To date, the only sectoral approaches have been voluntary, industry-based and technology-oriented. Pledges on greenhouse gas emissions and performance have included the International Aluminium Institute industry agreement, and the World Business Council on Sustainable Development's Cement Sustainability Initiative. It is not clear whether these agreements have led to reductions in emissions from these industries beyond business-as-usual levels.

The final option is to commit, up front, to a particular pathway to reduce allocations to zero over a set period. This phase down would be in addition to the proposed adjustment of the EITE assistance rate outlined in Section 9.6.1, and would be designed to be a proxy for the gradual emergence of global carbon constraints.

The benefit to business of a fixed up-front timetable for phasing out EITE assistance is that it would provide clarity and investment certainty, although at a risk that assistance would be removed ahead of comparable international action. The risk for Government is that EITE support would continue when it is no longer warranted if the world moves towards a global carbon constraint sooner than expected. As well as being costly it could be problematic if assistance was continued when the underlying rationale for assistance was no longer in place.

The Government's preferred position on the phase-out of assistance combines elements of these options. It proposes dealing with future commitments in two phases: from scheme commencement to 2020, and post-2020.

For the first phase, from the outset of the scheme to 2020, the Government would commit to provide assistance to EITE entities along the lines of the preferred model unless comparable carbon constraints are introduced in key competitor economies. By announcing a commitment to this approach, with a strict criterion for the removal of EITE assistance, the Government would provide industry with certainty and also provide a reasonable period to enable a smooth transition for the economy. The commitment to cease support if clearly comparable carbon constraints, such as binding sectoral agreements, were introduced reduces the risk that assistance would continue when the underlying rationale for support clearly no longer exists.

For the period beyond 2020, there is a greater need for flexibility. The Government's preferred position is to commit to phasing out assistance in the event of acceptable international action taking effect that places obligations on an industry's major international competitors. If that international action clearly implied that comparable carbon constraints were being applied in key competitor economies, such as a sectoral agreement or a comprehensive commitment to binding emissions caps in key competitor economies, support would be immediately withdrawn. If, however, the international action was of a more general nature that did not necessarily imply that comparable carbon constraints were being applied, assistance would be phased out over a five-year period to provide a reasonable time for transition from the time the agreement comes into effect. If neither of these conditions were met, the Government is disposed towards continuing assistance along the lines outlined earlier in this chapter.

9.9 Preferred position

Between 2010 and 2020:

- assistance would be provided to emissions-intensive trade-exposed industries as proposed unless broadly comparable carbon constraints are introduced in key competitor economies, in which case assistance would be withdrawn.

Beyond 2020:

- assistance would be withdrawn if broadly comparable carbon constraints are introduced in key competitor economies or
- assistance would be phased out over a five-year period in the event of acceptable international action that places obligations on an industry's major competitors or
- assistance would be continued as proposed in the absence of broadly comparable carbon constraints or acceptable international action.

Box 9.11
Provision of data and information to assist in further development of the EITE assistance policy

Phase I: July to September 2008

The Government is seeking information from stakeholders on potential EITE activities. These data would assist Government in taking final decisions on the design of the EITE assistance policy for inclusion in the white paper. These data would not be used to assess the eligibility of individual entities or activities for EITE assistance or for calculating assistance to EITE entities.

If individual entities or industry groups wish to submit data to the Government during this phase, they should do so as part of their submissions to this green paper. Please indicate clearly if you wish your submission to be treated as confidential.

Box 9.11
Provision of data and information to assist in further development of the EITE assistance policy
(continued)

The following information is requested. Any data provided should relate to production in 2006–07 and 2007–08 if available:

- descriptions of potential EITE processes or activities, including details of the boundaries that delineate these activities from other on-site activities and alternative boundaries that could be applied
- the direct emissions of the process or activity
- the electricity consumed by the process or activity
- the quantity of output produced by the activity
- the market price, domestic and/or international, of the output for the process or activity
- if internationally priced, where the market price is set.

The emissions data provided should be calculated using the measurement methodology in the National Greenhouse and Energy Reporting (Measurement) Determination 2008. Details of the measurement methodology used to estimate emissions should be provided.

The Government would also prefer that the information provided be verified by a third party (consistent with the preferred position regarding standards and guidelines outlined in Section 5.3.3) and that the details of the verification process are also provided. Information provided with verification will be given greater weight.

Any queries on the nature or form of data to be provided should be directed to the Emissions Trading Division in the Department of Climate Change. (Email: emissionstrading@climatechange.gov.au)

Phase II: 2009

In 2009, following finalisation of scheme design, further information will be required from stakeholders to finalise:

- the list of eligible EITE activities
- assistance rates for each eligible EITE activity
- baselines for allocations.

These details are proposed to be included in the scheme regulations.

This second phase of data collection will be a formal process ensuring that all data submitted is consistent and verified. Further details on the process for this second phase of data collection will be provided following finalisation of the scheme design.

Endnotes

1 European Commission 2008, *Questions and answers on the Commission's proposal to revise the EU Emissions Trading System*, MEMO/08/35, Brussels, 23 January 2008.

2 New Zealand Ministry for the Environment and the Treasury, *The Framework for a New Zealand Emissions Trading Scheme*, September 2007.

3 Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006, ABS Cat no. 1292.0.

4 Some argue that an impact is 'material' if it leads to significant changes in production or investment decisions. However, this would imply that even a very small carbon cost could be 'material' for marginal firms and industries. That position would lead to assistance being targeted towards marginal firms and industries, rather than towards those that are facing a temporary loss in profitability directly because of Australia's decision to adopt a carbon constraint ahead of key competitors.

5 Australian Competition and Consumer Commission, *Merger Guidelines Draft 2008*.

6 Australian Bureau of Statistics Working Paper No.97/1 Tradables: *Developing output and price measures for Australia's tradable and non-tradable sectors*. This methodology is applied in the calculation of traded and non-traded price indexes as published in the Consumer Price Index. ABS Cat no. 6401.0.

7 2001-02 data from the Australian Bureau of Statistics' Australian National Accounts input–output tables were used for this analysis, as they were the most recent data available. The bureau has since released updated tables for 2004–05, but they were not released in time to be used in analyses for this green paper.

8 Australian National Accounts: Input Output Tables, Electronic Publication, 2001-02, ABS Cat no. 5209.0.55.001.

9 Analysis conducted by the Department of Climate Change, data sourced from the Centre for Integrated Sustainability Analysis, University of Sydney, 2008. Emissions intensity was obtained using generalised input-output analysis and is consistent with Kyoto Accounting in terms of the coverage of greenhouse gases and sectoral treatment. Emissions intensity is calculated as the sum of direct and indirect electricity emissions relative to the value of revenue for each industry for the year 2001–02. Only Australian-sourced emissions are included. These intensities are calculated under a basic prices valuation in terms of final demand and are provided for the comparison of sectoral performance. They are not applicable to carbon footprinting of companies, projects, investment funds and portfolios, households or consumers. This analysis was conducted prior to the release (in June 2008) of 2004–05 input-output tables. Further details of the data underlying this graph are provided in Appendix D.

10 Note that excluding agriculture emissions is broadly equivalent to 100% shielding of emissions from the whole agricultural sector. During the early years of the scheme, the degree of combined assistance provided to EITE industries and agriculture would thus be at least equivalent to the free provision of around 30 per cent of national permits.

11 See individual state National Allocation Plans for phase I and II of the EU ETS available on the European Commission website: http://ec.europa.eu/environment/climat/emission/emission_plans.htm

12 Examples include the United Kingdom Phase II benchmark exercise and the New Zealand negotiated agreements process.

13 European Commission 2008, *Questions and answers on the Commission's proposal to revise the EU Emissions Trading System*, MEMO/08/35, Brussels, 23 January 2008.

14 New Zealand's Phase Out of Assistance: *Briefing for the Climate Change Leadership Forum*, April 2008.

10. Strongly affected industries

This chapter identifies industries that are likely to be strongly affected by the introduction of a carbon constraint and considers possible measures to assist these industries.

The Australian Carbon Pollution Reduction Scheme will increase the cost of producing emissions-intensive goods and services. Changes in production costs may also lead to changes in the prices paid by consumers for different goods and services. These cost and price changes will assist in driving least-cost abatement in the Australian economy.

Where industries cannot fully pass on increases in production costs to consumers, entities in those industries may face a reduction in their profitability. While all segments of the community will share some of the burden of achieving emissions reductions, some industries may be particularly strongly affected. The Government has committed to addressing the impact of the scheme on strongly affected industries.

This chapter addresses the following issues:

- Section 10.1 considers the characteristics of industries that are likely to be strongly affected by the scheme.
- Section 10.2 assesses whether particular industries display those characteristics.
- Section 10.3 considers structural adjustment measures that could assist the coal-fired electricity generation sector, including workers, communities and regions in that sector, to transition to the scheme.
- Section 10.4 considers possible rationales for providing direct assistance to coal-fired electricity generators in addition to the structural adjustment measures identified in Section 10.3.
- Section 10.5 considers options for the delivery of the proposed direct assistance through the Electricity Sector Adjustment Scheme.

10.1 Identifying strongly affected industries

The scheme will affect some industries more than others. Chapter 9 considers the affect of the scheme on emissions-intensive, trade-exposed (EITE) industries, and outlines the Government's preferred position to provide assistance to trade-exposed entities that undertake emissions-intensive activities and processes.

The Government does not propose to provide assistance to trade-exposed industries beyond that canvassed in Chapter 9, that is, no trade-exposed industries would receive assistance as a strongly affected industry. However, the Government will consider providing assistance to strongly affected non-trade-exposed (domestic) industries.

The domestic industries that are most likely to be strongly affected by the scheme are those that can expect to have a significant reduction in profitability that leads to a large reduction in their asset values. This section outlines the characteristics of domestic industries in which this may occur.

The National Emissions Trading Taskforce[1] (NETT) has considered ways of identifying domestic industries that were likely to be strongly affected by an emissions trading scheme (see Box 10.1).

Box 10.1
NETT's characteristics of industries eligible for assistance

NETT recommended that a firm requesting assistance on the basis of experiencing disproportionate loss must also 'demonstrate that:

- it is not trade-exposed
- it is emissions-intensive, defined in the same way as for [emissions-intensive trade-exposed industries]
- it has very large, sunk capital costs
- its ability to pass on costs is constrained by domestic competitors that face no commensurate increase in costs as a result of the scheme'.

Source: National Emissions Trading Taskforce, Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design, 2007, p. 57.

10.1.1 Emissions intensity

Emissions intensity is a key factor in identifying strongly affected industries. The higher the emissions intensity of an industry, the higher the increase in production costs it faces.

There are several ways in which the Government could determine the emissions intensity of an industry. For the reasons outlined in Section 9.3.2, the Government proposes tonnes of emissions of carbon dioxide equivalent (CO_2-e) per unit of revenue as the measure of emissions intensity.

As outlined in Chapter 9, the Government's preferred position is that trade-exposed entities be eligible for EITE assistance where those entities undertake activities or processes that have an industry-wide emissions intensity above a threshold level of emissions intensity at which the Government considers the carbon cost impact of the scheme is most significant and material.

The Government's preferred position is to set the threshold for eligibility for EITE industry assistance at about 1500 tonnes of CO_2-e per million dollars of revenue (tCO_2-e/$m revenue). Note this threshold may change on the basis of further information provided through the consultation process following the release of this green paper (refer to Chapter 9).

The Government presumes that trade-exposed industries cannot pass on their costs and so considers that it is not appropriate to have a lower eligibility threshold for

providing assistance to domestic industries, where, subject to other considerations, the Government presumes that costs can be passed on.

The Government could adopt a higher eligibility threshold for providing assistance to domestic industries to reflect the greater likelihood that they will be able to pass on their costs. However, the Government has identified other characteristics of domestic industries that affect their ability to pass on costs, and which may be a more appropriate way of identifying strongly affected industries.

On this basis, the Government considers that a common eligibility threshold for assistance should be used for trade-exposed and domestic industries, but that entities in the latter category must demonstrate additional characteristics in order to warrant consideration for assistance as a strongly affected industry.

10.1.2 Ability to pass on carbon costs

The ability of a domestic entity or industry to pass on carbon costs to consumers is determined by the interaction of domestic supply-side and demand-side factors. An inability to pass on costs is a defining feature of a strongly affected industry.

The key demand-side factor is the response of consumers to an increase in the price of a product. Domestic industries are less able to pass carbon costs through to consumers when increases in the price of their products result in markedly reduced sales. Consumer responsiveness to changes in the price of a given product is known as the 'price elasticity of demand' of that product.

If an industry faces a high price elasticity of demand (that is, if a given rise in price induced by the scheme will result in a relatively large reduction in demand), then the industry will be unable to pass a significant portion of its carbon costs through to consumers. Conversely, the industry is able to pass through most of its carbon costs if its price elasticity of demand is low and such industries will not face a significant impact from the scheme.

In practice, a range of factors influence the price elasticity of demand. The two most significant are the availability of substitute products and the proportion of income that consumers spend on a product. In general, the greater the range of substitutes for a product, the higher its price elasticity of demand, as consumers can readily shift to alternatives. Generally, the smaller the proportion of income consumers spend on a product, the lower its price elasticity of demand.

The key supply-side factor to consider is the relative emissions intensity of different production processes. If all entities in an industry use similar technology, they will all face a similar increase in costs under the scheme and entities will be able to pass these costs through to consumers to the extent allowed by their price elasticity of demand. However, if an entity is significantly more emissions-intensive than others that sell the same product, it will not be able to increase its prices without fear that its lower-emissions competitors will undercut them. Competitors for such emissions-intensive entities are not limited to existing producers, but include potential new entrants that can use less emissions-intensive technologies.

Where entities cannot pass on a large portion of their carbon costs, they may experience a significant reduction in their profitability and the value of the assets they own.

The ability of an entity to pass through carbon costs could also be affected by contractual or regulatory arrangements, such as long-term fixed-price contracts or pricing regulations that inhibit timely carbon-reflective pricing. Those impediments could increase the impact of the scheme on particular entities or industries.

The Government will consider whether commercial contractual arrangements and existing pricing regulations are relevant factors for identifying strongly affected industries. Chapter 12 seeks comment on the nature and possible impact of those impediments in light of the scheme.

The Government considers that strongly affected industries must include some entities that are emissions-intensive relative to their competitors, such that they cannot pass on carbon costs and could experience significant losses in asset value.

10.1.3 Significant 'sunk' capital costs

The impact of the scheme on a entity or industry that is constrained in its ability to pass carbon costs through to consumers will also depend on the nature of the capital that the industry employs.

Where an entity or industry uses assets that are long-lived and unable to be turned to alternative economic uses, an inability to pass on carbon costs will be reflected in a decrease in the assets' value. The capital costs associated with those assets will not be able to be fully recouped by turning it to an alternative economic use. The capital costs can be thought of as 'sunk'.

Conversely, where assets can be redeployed to alternative uses that are more profitable under a carbon constraint their capital costs can be recovered at least in part and an inability to pass on carbon costs can be mitigated.

There are many examples of capital costs that are not sunk. For example, an entity in the service industry might own an office building. A decline in the profitability of that entity could be partly offset by selling the building to another, more profitable entity. Redeploying the building to an alternative use allows recovery of some of the capital cost of the building, offsetting the reduced profitability of its original use.

If the entity or industry is capital intensive (that is, the amount of capital it employs to achieve a given value of production is high), its sunk capital costs could be large enough to warrant assistance; if it is not capital-intensive, the loss of sunk capital is unlikely to be sufficient to warrant assistance.

In identifying strongly affected industries, the Government must consider whether particular industries have incurred significant sunk capital costs.

10.1.4 Significant economically-viable abatement opportunities

If an entity could cheaply and significantly reduce its emissions intensity, it would be unlikely to be strongly affected by the scheme.

The Government will consider the availability of significant and economically viable abatement opportunities for particular entities or industries when considering the need for assistance measures for strongly affected industries.

10.1 Preferred position

The characteristics of strongly affected industries are that they must:

- be non-trade-exposed (as entities in trade-exposed industries may be eligible for assistance as emissions-intensive trade-exposed industries)
- be emissions-intensive (exceeding the threshold for eligibility proposed for emissions-intensive trade-exposed industries)
- include some entities that are emissions-intensive compared to their competitors, such that they cannot pass on carbon costs and could experience significant losses in asset value
- have significant sunk capital costs
- not have significant economically viable abatement opportunities available to them

10.2 Possible strongly affected industries

Preliminary analysis of the emission intensity of Australian industries has identified four domestic industries or sub-industries that appear to be above the proposed 1500 tCO_2-e/$m revenue threshold.[2] These are:

- electricity generation[3]
- waste[4]
- the production of natural gas[5]
- gas supply.[6]

Further details are outlined in Appendix D.

This section assesses whether these four domestic emissions-intensive industries share the other characteristics of strongly affected industries: an inability to pass through carbon costs; significant sunk capital costs; and a lack of economically viable abatement opportunities.

This analysis is preliminary and it is possible that other industries that are not trade-exposed and which exceed the emissions intensity threshold have not been identified.

The Government seeks stakeholder feedback on whether any other industry might meet the proposed characteristics of strongly affected industries outlined in this chapter.

10.2.1 The electricity generation industry

Trade exposure

Electricity generation is not trade-exposed. The absence of electricity transmission infrastructure connecting Australia to other countries constitutes a physical barrier to trade.

Emissions intensity

Electricity generation in Australia is emissions-intensive overall because of its reliance on fossil fuels. Preliminary analysis estimates the average emissions intensity of the electricity supply industry to be 9945 tCO_2-e/$m, based on 2001–02 data (see Appendix D). The electricity supply industry includes transmission, distribution and retail, and so the emission-intensity of the electricity generation sector is likely to be higher than the sector average.

Ability to pass on carbon costs

Demand for electricity is relatively inelastic. This is important, because it indicates that, absent particular supply side issues, the industry as a whole may be able to pass a large share of its carbon costs to consumers.

The experience of the European Union following the introduction of its emissions trading scheme was that a large proportion of the costs of the scheme were passed on by electricity generators to consumers. However, caution is needed in generalising from this experience as the particular characteristics of European electricity markets, in particular the mix of fuel sources and the regulatory environment, are quite different from Australia. Box 10.2 discusses the lessons learnt from permit allocation to electricity generators in the European Union Emissions Trading Scheme (EU ETS).

Box 10.2
Lessons from permit allocation in the EU ETS

Four main lessons about permit allocation to electricity generators can be drawn from the experience of Phase I of the EU ETS.

First, too many allowances (permits) in total were allocated by EU member states through their national allocation plans (NAPs) for Phase I (2005–07) of the EU ETS, compared with total demand. This was largely the result of inadequate available information about emissions from liable entities when allocation decisions were made. When this information became available in April 2006, the price of EU ETS emissions allowances fell substantially.

Second, many electricity generators were allocated allowances covering almost all of their historic emissions. In practice, generators in liberalised electricity markets included the value of their emissions allowances in their pricing decisions and passed most of this cost through to consumers, even though the majority of their allowances were received free of charge. The combination of very generous allocations and the ability to pass on most costs meant that some fossil fuel-fired generators were able to earn windfall profits from the scheme, causing considerable public controversy.

Third, the sequential approach to permit allocation adopted in the EU ETS appears to have encouraged some electricity generators to remain in operation even when it may have been rational for the generator to have shut down in face of the prevailing carbon price.[7] Under a European Commission directive, member states were required to submit new NAPs for Phase II of the EU ETS (2008–2012) midway through Phase I. Generators anticipated that, if they stayed in operation, they would receive a further free permit allocation in the Phase II NAPs, and that the quantum of their allocation for Phase II might be set according to their emissions during Phase I. This is known as the 'updating problem'.

Fourth, perverse incentives for some generators to stay in operation were strengthened by rules that required any free allowances to be handed back in the event of closure. The updating problem and closure rules appear to have weakened incentives for abatement.

Some generators may be constrained in their ability to pass on carbon costs to consumers. Different technologies are used to generate electricity in Australia, and they vary significantly in emissions intensity. Highly emissions-intensive coal-fired generators

compete with lower emissions (but still emissions-intensive) gas-fired generators, and with zero emissions electricity sources such as wind or hydro generation.[8]

In the context of the competitive structure of Australia's major electricity markets, this variability might prevent coal-fired electricity generators, in particular, from passing on a significant portion of their carbon costs, reducing their profitability.

The profitability of emissions-intensive generators could be reduced in two ways.

- First, generators could lose market share to generators with lower emissions intensity. A reduction in volume is particularly significant for coal-fired generators, because they need to sell significant quantities of electricity to cover their high fixed capital and maintenance costs.
- Second, competition with less emissions-intensive generators could reduce the margins earned on electricity sold by more emissions-intensive generators. Box 10.3 illustrates how the profitability of low-variable cost, high-emissions generators in the National Electricity Market (NEM), such as coal-fired generators, can be reduced by the imposition of a carbon price.

Box 10.3
Possible effects of the scheme on the National Electricity Market

The National Electricity Market (NEM) is a wholesale electricity market through which generators, retailers and large users trade electricity.

The National Electricity Market Management Company (NEMMCO) oversees the operation of the wholesale market. Competition between generators to satisfy prevailing demand, determines who produces electricity and at what price.

Generators bid electricity into the NEM's 'pool', while retailers and large users buy electricity from the pool for use or resale. NEMMCO aggregates supply bids and instructs ('dispatches') generators to produce enough electricity in total to match demand. Because electricity cannot be easily stored, NEMMCO must continuously balance supply and demand in real time.

NEMMCO seeks to dispatch generation to meet demand at the lowest possible cost subject to constraints on the operation of the market. To achieve this, NEMMCO dispatches the lowest priced generation offers preferentially, and progressively dispatches higher priced generation offers until demand is satisfied.

The NEM consists of five regions: Queensland, New South Wales, Victoria, Tasmania and South Australia. All generators in each NEM region receive the same price for their electricity, regardless of their offer price. The price is determined at five minute intervals, which are then aggregated into prices for every half-hour period of the day, and is known as the 'spot price'.

The spot price in each NEM region is equal to the offer price of the lowest priced unit of generation capacity that was not needed to meet demand in the market in that period.

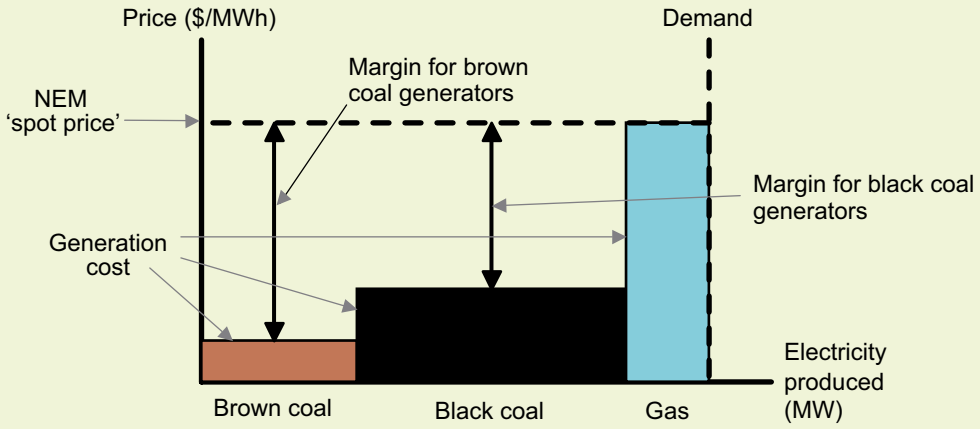
Box 10.3
Possible effects of the scheme on the National Electricity Market (continued)

When generators produce electricity and the spot price is above their operating cost, they earn a margin on that electricity.

Figure 10.1 shows how the relative cost of generation in the NEM can allow the lowest cost generators, generally coal-fired generators, to earn a margin on their electricity when demand is sufficiently high that relatively high-cost generation sources are required to meet demand. At those times, the NEM spot price can be significantly above the operating cost of coal-fired generators, allowing them to earn a margin that can be used, among other things, to pay for fixed operating and maintenance costs, to service debt, or to provide returns to shareholders.

However, the effective returns for coal-fired generators depend on their financial market arrangements. Typically a large portion of the output of coal-fired generators has been sold forward at a price significantly below that being received in the spot market during periods of high demand.

Figure 10.1: Margins earned by coal-fired generators in the absence of the scheme



The scheme will cause the operating costs of emitting generators to increase according to the following formula:

- cost increase ($/megawatt-hour) = permit price ($/$tCO_2$-e) × emissions intensity (tCO_2-e/megawatt-hour)

Clearly, the most emissions-intensive generators will face an increase in their operating cost that is higher than that of less emissions-intensive generators.

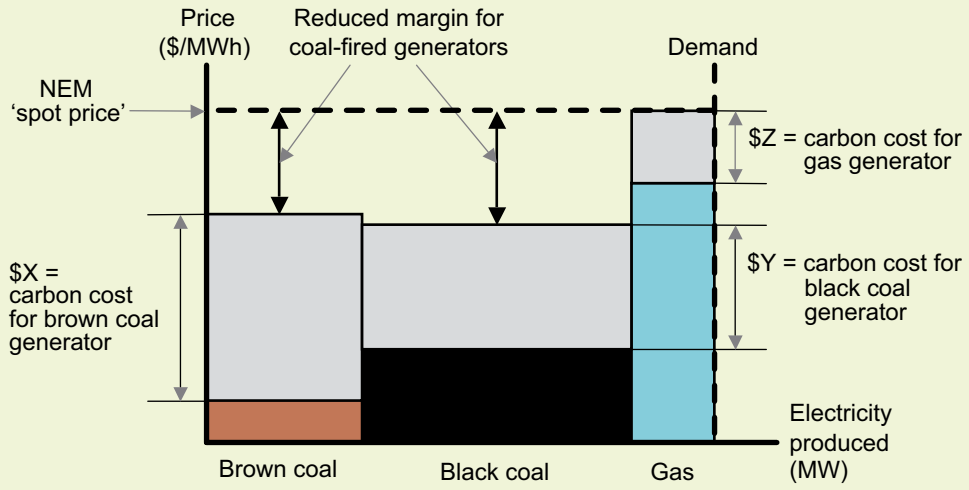
Coal-fired generators are generally both the lowest cost and most emissions-intensive generators in the NEM.

Box 10.3
Possible effects of the scheme on the National Electricity Market (continued)

Where the NEM spot price is set by a relatively less emissions-intensive generator, the operating cost of emissions-intensive generators will increase more than the spot price, resulting in those generators earning a reduced margin on the electricity they sell.

Figure 10.2 illustrates this outcome. Although the NEM spot price increases by $Z, the operating cost of brown coal and black coal generators increases by a greater amount ($X and $Y per megawatt-hour, respectively). The reduction in the margin on each unit of electricity sold by these coal-fired generators in this notional example is $(X – Z) for brown coal, and $(Y – Z) for black coal.

Figure 10.2: Carbon costs can reduce the margin earned by coal-fired generators



In this example, the less emissions-intensive gas-fired generator is indifferent to the introduction of the scheme, as it can pass on its carbon cost in full. Under different circumstances, a more emissions-intensive generator may be the highest cost generator required to meet demand. This would allow less emissions-intensive generators to earn an increased margin on their sales of electricity in the NEM.

This is one way the scheme could affect the asset values of less emissions-intensive generators; the other occurs where these generators produce more electricity due to their improved competitive position.

Gas-fired generators are likely to benefit from the scheme. The imposition of a carbon price improves their competitive position against coal-fired generators, so that they are likely to be able to pass on their full carbon costs.

Some oil-fired generators are still operating in the NEM and the Western Australian Wholesale Electricity Market (WEM). They have even higher generating costs than gas-fired generators, and so are only likely to generate at times of extremely high prices and

demand. As with gas-fired generators, oil-fired generators are likely to be able to pass on their full carbon costs.

Zero-emissions renewable generators are likely to benefit from the scheme, as the scheme will impose no increase in their operating costs but wholesale electricity prices will rise.

Significant 'sunk' capital costs

The electricity generation industry employs significant long-lived assets with limited alternative economic uses. Investments in electricity generation assets can be thought of as sunk capital costs.

Furthermore, the most emissions-intensive assets in the industry—coal-fired generators—are also significantly more capital-intensive than gas-fired generators.

ACIL Tasman has estimated the cost of new-entrant generation options for NEMMCO for the purpose of power system planning in the NEM. Table 10.1 compares the capital costs of four new-entrant fossil fuel-fired generation options. ACIL Tasman estimates that the capital cost of a new-entrant super-critical coal-fired generator is well over twice that of an open-cycle gas turbine generator, and 60–80% higher than that of a combined-cycle gas turbine generator, for each unit of capacity. While ACIL Tasman's estimates do not necessarily reflect the capital costs incurred in constructing the existing generation stock, the table highlights the relative capital intensity of coal-fired generation.

Table 10.1 New entrant capital costs (nominal 2008–09 capital cost estimates)

Technology	Capital cost ($/kW capacity)
Brown coal	1938
Black coal	1734
Combined-cycle gas turbine[a]	1071
Gas turbine	734

a A combined-cycle gas turbine generates electricity through the combustion of gas in a gas turbine, and captures waste heat from the combustion to generate additional electricity with an auxiliary steam turbine.

Source: ACIL Tasman, Fuel resource, new entry and generation costs in the NEM: Report 2 – data and documentation, accessed 6 June 2008, <http://www.nemmco.com.au/psplanning/410-0090.pdf >.

Absence of significant economically viable abatement opportunities

The most emissions-intensive entities in the electricity generation industry lack significant economically viable abatement opportunities. Although there is scope for small improvements, significant economically viable reductions in the emissions intensity of existing coal-fired generation assets are not available in the absence of proven carbon capture and storage (CCS) technologies.

Although proven CCS technologies are not currently available, the timeframe in which they might become viable for deployment by coal-fired electricity generators

is an important factor in considering the period over which the generators could be considered to be strongly affected by the scheme.

Is the electricity generation industry likely to be strongly affected?

The Government considers that coal-fired assets in the electricity generation industry are likely to be strongly affected by the scheme based on the proposed characteristics, but other electricity generation assets, including gas-fired, oil-fired and renewable assets, are unlikely to be strongly affected.

10.2.2 The waste industry

While the waste industry displays many of the proposed characteristics of a strongly affected industry, the Government does not presently consider that it satisfies two characteristics.

First, it is unclear whether the waste industry is constrained in its ability to pass on carbon costs. Different landfill facilities appear to vary significantly in emissions intensity because of the long period over which waste breaks down and releases methane. Old landfills with large accumulated bodies of waste are likely to have higher emissions intensities than newer facilities.

This variability has the potential to alter the relative competitive position of different landfill facilities. The Government seeks more information on the nature of competition within the industry, and whether this constrains more emissions-intensive facilities from passing on carbon costs.

Second, the waste industry also appears to have access to economically viable abatement opportunities. Methane released from landfill or wastewater facilities can often be flared, or captured and used to generate electricity. The more emissions-intensive the facility, the more likely that such abatement opportunities will be feasible.

The viability of waste methane generation projects will be further enhanced by the Government's proposed expansion of the Renewable Energy Target to require the generation of 45,000 GWh of renewable energy in 2020.

The Government does not presently consider that the waste industry demonstrates the characteristics of a strongly affected industry.

The Government seeks stakeholder feedback on competitive constraints and abatement opportunities in the waste industry.

10.2.3 The natural gas industry

The natural gas industry extracts gas from natural gas fields or coal seams and processes the raw gas to sales quality. For the purpose of this discussion, the extraction, processing and compression of gas for export as liquefied natural gas can be considered as a separate, trade-exposed industry.

There are significant differences in the emissions intensity of different gas producers, mainly because of variability in the amount of CO_2 in the raw gas that must be stripped and vented for the gas to reach sales quality. The expansion of Australia's transmission pipeline network means that relatively high CO_2 content fields (such as the Cooper–Eromanga Basin) compete with lower CO_2 gas sources (such as Queensland coal-seam methane or gas from Victoria's Otway and Gippsland basins).

The natural gas industry appears likely to benefit from the scheme. The demand for gas is likely to increase, particularly as a fuel for electricity generation. All gas producers, even those that are relatively emissions-intensive, are likely to benefit from this effect. It seems highly likely that even the most emissions-intensive producers will be able to pass on their carbon costs to consumers.

The Government does not presently consider that the natural gas industry demonstrates the characteristics of a strongly affected industry.

10.2.4 The gas supply industry

The 'gas supply' industry–primarily the transport of gas to small customers through low-pressure distribution pipelines–appears to be emissions-intensive, due mostly to leaking of methane. (The transport of gas through high-pressure transmission pipelines is defined as a separate industry, 'pipeline transport', and is not emissions-intensive).

There are no competitive constraints on the ability of gas distributors to pass on carbon costs. Gas distribution operators are regarded as having a 'natural monopoly'—it is generally uneconomic to duplicate distribution networks, and so there is only one distributor serving any particular geographic area.

Because of their natural monopoly characteristics, the prices that gas distributors can charge for their services are generally regulated. The regulatory regime for gas distribution service providers allows them to recover their 'efficient costs' from the tariffs they charge to consumers. A key principle of this regulatory regime is that a regulated tariff for a pipeline service should be designed to provide the pipeline service provider with 'a reasonable opportunity to recover at least the efficient costs the service provider incurs in providing [those] services'.[9]

What constitutes an 'efficient cost' is ultimately a decision for the relevant regulators under this regime–the Australian Energy Regulator and the Economic Regulation Authority of Western Australia. Chapter 12 discusses the question of regulatory impediments to cost pass-through in more detail.

Assuming the existing regulatory regime allows the pass-through of reasonable carbon costs, the Government does not presently consider that the gas supply industry demonstrates the characteristics of a strongly affected industry.

10.2 Preferred position

Coal-fired electricity generators are likely to be strongly affected by the scheme, based on the characteristics proposed in Section 10.1.

10.2.5 Other industries

Stakeholders are encouraged to provide information if they believe that other industries demonstrate the characteristics of strongly affected industries set out in Section 10.1.

Box 10.4 considers the case of the aviation industry, in part to illustrate the way the Government would consider other claims for assistance as a strongly affected industry.

Box 10.4
Analysis of domestic aviation against the characteristics of a strongly affected industry

Industries that produce a significant amount of emissions may well prove not to be strongly affected by the scheme. The Government considers that the domestic aviation industry is an example of such an industry.

As set out in Section 10.1, the Government considers that there are five key characteristics of a strongly affected industry, and that an industry must demonstrate all five of them to warrant assistance.

Although Australia's aviation industry produces a significant amount of greenhouse gas emissions through the combustion of aviation fuel, the industry is not highly emissions-intensive. Personal air travel and airfreight are high-value services, so the emissions intensity of the industry, per dollar of revenue, is relatively low.

Preliminary analysis indicates the emissions intensity of the 'air and space transport industry' in 2001–02 was 384 tCO_2-e/$m revenue. This is well below the Government's proposed assistance eligibility threshold of 1500 tCO_2-e/$m revenue, and over 25 times lower than the emissions intensity of the electricity supply sector (9945 tCO_2-e/$m revenue).

Emissions intensity is fairly homogenous across the aviation industry. Some aircraft will operate more fuel-efficiently than others, while others will produce a higher value product from the same amount of fuel (for example, by carrying more passengers), but those variations are not likely to be large enough to have significant impacts on individual entities or assets. As a result, individual entities or assets in the industry will generally be able to pass on carbon costs because their competitors will face similar cost increases. Further, the elasticity of demand of domestic aviation may be such that the industry as a whole can pass on a high proportion of its carbon costs.

Finally, the capital costs of aircraft are not 'sunk'. Aircraft value is not related to the particular routes flown or other geographical characteristics of the asset owner.

Given the analysis above, the Government presently considers that the aviation industry does not demonstrate the characteristics of a strongly affected industry.

10.3 Structural adjustment assistance for the coal-fired electricity generation sector

The Government presently considers that the coal-fired electricity generation sector demonstrates the characteristics of a strongly affected industry. On this basis, it is appropriate to consider possible measures that can assist the transition of this sector to the scheme.

The Government can make an important contribution to structural adjustment in the coal-fired electricity generation sector through the provision of assistance for the development and deployment of carbon capture and storage (CCS) technology. This assistance can help the sector achieve emissions abatement with greater economic efficiency.

The Garnaut Climate Change Review identified several ways that successful Government intervention can improve economic efficiency by reducing the cost of achieving a given level of abatement in a way that is unlikely to be achieved by the private sector operating in response to a carbon price alone (see Box 10.5).

Box 10.5
The Garnaut Climate Change Review's views on addressing market failures

The Garnaut Review has argued that 'the public good nature of basic research and the positive externalities of innovation mean that simply establishing a price on emissions will not generate optimal levels of investment in technological change'.[10]

On this basis, the review has put forward the view that successful government intervention to correct market failures can improve the economic efficiency of an emissions trading scheme. The review identifies two types of government intervention to correct market failures that are specific to the coal-fired electricity generation sector:

- assistance for research, development and deployment of carbon capture and storage technologies
- assistance to overcome 'first mover' disincentives for the development of pipeline infrastructure to transport carbon dioxide for sequestration.

10.3.1 Government commitments to CCS

Carbon capture and storage (CCS) is a transformational technology which offers the potential to significantly reduce global greenhouse gas emissions, particularly from coal fired power generation. Modelling prepared for the International Energy Agency identified that 'CCS for power generation and industry is the most important single new technology for CO_2 savings'.[11]

As the world's largest coal exporter[12] and fourth largest coal producer, Australia has a vital interest in transformational technologies such as CCS being successfully commercialised as part of the domestic and global response to climate change.

The Government recognises that early commercialisation of CCS is critical to meeting Australia's goal of 60 per cent reduction in emissions by 2050. As such, the Government has committed to a range of CCS demonstration projects and research programs as part of the National Clean Coal Initiative, providing $500 million over seven years in the 2008–09 Budget to form the National Clean Coal Fund. The fund will support a range of national research programs and demonstration projects, and will facilitate the provision of infrastructure and carbon dioxide storage sites, to accelerate the development and deployment of CCS technologies in Australia.

The Government recognises that ongoing support will be needed to continue to help drive the development and deployment of CCS technology.

The Government is also supporting a range of CCS related projects with key international partners, including China, through its $100 million contribution to the Asia–Pacific Partnership on Clean Development and Climate.

Table 10.2 Australian Government funded CCS projects in Australia

Project	Lead proponent	Technology	Funding
Otway	Cooperative Research Centre for Greenhouse Gas Technologies (CO2CRC)	CO2 sequestration	Approx $25 m
Callide A	CS Energy	Pre-combustion capture (oxy-firing)	$50 m
Gorgon	Chevron	CO_2 sequestration	$60 m
HRL IDGCC	HRL Limited	Capture-ready plant (IDGCC)[a]	$100 m
Hazelwood	International Power	Post-combustion capture trial	$50 m[b]
Munmorah (NSW), Tarong (Qld)	CSIRO	Post-combustion capture trials	$8 m
Pilot coal gasification plant, Qld	Election commitment	Coal gasification	$50 m
Post combustion capture plant, Vic	Election commitment	Post-combustion capture demonstration	$50 m
Post combustion capture plant, NSW	Election commitment	Post-combustion capture demonstration	$50 m
National carbon mapping and infrastructure plan	Election commitment	CO_2 transportation and sequestration	$50 m
National Clean Coal Research Program	Election commitment	Various	$75 m

a Integrated drying gasification combined cycle (IDGCC) generation involves the drying of brown coal, its conversion into a synthetic gas, and the combustion of the synthetic gas in a combined-cycle gas turbine.

b The Low Emissions Technology Demonstration Fund provided funding to Hazelwood for the demonstration of coal-drying techniques as well as carbon capture and storage technology

Australia's significant contributions to the development and deployment of CCS technology, reflect the urgency and importance that the Government attaches to the transformation of coal-fired electricity generation. The Government recognises that these contributions will be most effective when delivered through targeted and specific programs to address particular technical or institutional hurdles to the technology.

10.3 Preferred position

The Australian Government has made significant contributions to progress the commercial deployment of carbon capture and storage (CCS). These contributions, and any further support, should recognise the technical and institutional hurdles to the development and deployment of carbon capture and storage technologies, and reflect Australia's significant domestic and international interests in the development of this technology.

10.3.2 Workers, communities and regions

Structural change in the economy induced by the scheme will affect particular industries more than others. The Government's major initiatives in relation to CCS, outlined in Section 10.3.1, will boost the medium to longer-term prospects of workers and communities in coal-fired electricity generation regions.

The Garnaut Review suggests that 'regions that are home to coal-based electricity generation – and eventually coal exports as mitigation is taken more seriously in Asia – may face a bleak future if carbon capture and storage technology is not made commercially viable… commercially successful carbon capture and storage could turn the coal-based areas into regions of expansion and prosperity'.[13]

It will take time to ascertain the commercial viability of CCS technologies. In the interim, imposing a carbon constraint may affect the coal-fired electricity generation sector, with implications for the workers, communities and regions dependent on this sector. The scheme may also impact on other domestic industries or trade-exposed industries, with implications for workers, communities and regions dependent on those industries.

Box 10.6
The views of the Productivity Commission and the Garnaut Climate Change Review on structural adjustment

The Productivity Commission has argued that 'while many investors can spread their risks by having a diversified portfolio, some workers' assets (for example, the value of their skills and training and houses) are often specific to a particular occupation/industry or location. On these grounds, there may be a case for assisting workers who are adversely affected by a policy change'.[14]

Similarly, the Garnaut Review argues that 'where the structural adjustment process is focussed in particular regions or communities, there is good reason and well established precedents for governments providing assistance to individuals and communities'.[15]

The Productivity Commission has considered many factors that may increase the need for assistance to workers and regions: 'assistance may be warranted where a reform induced shock (such as the closure of a dominant firm) occurs suddenly, is large relative to the size of the industry base of the affected region, and where opportunities for alternative employment are limited'.[16]

The Garnaut Review has observed that targeted structural adjustment assistance measures typically try to 'prepare workers for new employment and communities for new industries through:

- retraining of workers
- grants to communities to support improvements in infrastructure that would help to attract alternative industries

and

- assistance to parts of the industry that have opportunities for survival and expansion in the new, more competitive circumstances'.[17]

As outlined in Box 10.6, workers are generally less able to diversify their income sources than business entities. Although Australia's flexible economic structure allows labour to move between industries in response to structural changes, the difficulty workers face in diversifying their income sources means that there is a risk that these changes will impose costs on particular groups of workers and their communities, even in an environment of strong growth and low unemployment.

The difficulty of diversifying income sources to sustain future prosperity is also an issue for regions, particularly resource-rich, non-urban regions. Such regions are often dependent on particular industries for a large share of their economic prosperity. Those industries can directly employ a large part of a region's workforce and indirectly sustain many associated businesses and community services.

On this basis, there is a strong case for the Government to consider assistance to particular groups of workers, communities or regions that are affected by the scheme.

This section considers principles against which the need for assistance can be assessed.

Taking into account existing assistance measures

Successive Australian Governments have established measures to address the impacts of economic changes on individuals and communities.

Established measures for providing assistance to individuals include:

- social security benefits, which help individuals to cope financially with periods of unemployment
- employment programs, which help individuals to move between jobs and reduce periods of unemployment.

The Government also provides funding for projects that benefit local communities and regions through the *Better Regions Program*. Communities and regions can apply for funding through this program to assist their adjustment to economic changes.

Providing assistance through these generally applied measures does not require the Government to identify in advance the likelihood of a need emerging in a particular community or region, or for a particular group of workers.

Furthermore, unlike measures targeted specifically to address the impact of the scheme on a particular group of workers, or particular communities or regions, generally applied assistance measures do not require the Government to identify a causal link between the introduction of the scheme and the emergence of a particular need.

The Government could promote fairness for workers affected by the scheme by assisting them to take up new employment opportunities, or to promote economic efficiency by facilitating their movement to new employment opportunities. However, these objectives are already promoted for the entire community through generally applied measures, so the need to pursue them for particular groups of workers and their communities through targeted measures is lessened.

On this basis, the need for targeted assistance to address the impact of the scheme on particular groups of workers, communities or regions should take into account the existence of measures that are already generally applied.

The need for targeted assistance measures

Although general measures to address genuine need throughout the community are in place, significant structural changes can still affect particular groups of workers, communities or regions in a way that requires targeted assistance.

The Government considers that the case for additional targeted assistance is stronger on equity and fairness grounds where a clear and sizable burden has been imposed on a specific segment of the community.

Targeted measures are more likely to be effective where the affected group can be readily identified. Targeting has two main elements:

- Assistance should be provided to a specific segment of the community that has a genuine need for assistance, without providing assistance to those who are not in need.
- Assistance should be available at the time at which it will be most effective.

The two elements are related. Predicting the pattern and extent of need before it emerges is difficult, and increases the risk of poorly targeted or ineffective assistance. Providing assistance to particular groups or individuals that are in genuine need is easier where the need is already evident, but the assistance may have been more effective if provided earlier in the adjustment process. For example, employed job seekers are generally more effective at finding new work than the unemployed, and so employment assistance may be more effective when provided to workers in advance of, rather than following, the closure of a facility.

The effects of the scheme are likely to be complex, widespread, variable and difficult to predict. Given this, the Government's approach to providing targeted structural adjustment assistance to workers, communities and regions that are affected by the scheme should be flexible and responsive. This approach increases the likelihood that the Government will provide well-targeted and effective assistance.

Assistance is likely to be better targeted if it is provided when a burden has already been imposed on an identifiable segment of the community, or where such a burden is highly likely to emerge in the near future (such as with the announcement of the closure of a particular facility).

Targeted assistance could take many forms, depending on the particular circumstances. Box 10.7 illustrates how recent assistance packages for the dairy and fisheries industries were tailored to their specific needs.

Box 10.7
Previous structural adjustment packages

The Dairy Industry Adjustment Package

For many years, a range of government-imposed pricing arrangements acted as a form of income support for Australian dairy farmers. Those arrangements were wound back from 1 July 2000, and the Australian Government created the $1.94 billion Dairy Industry Adjustment Package to help the dairy industry and dairying communities adjust to the deregulated environment. The package comprised four programs.

The Dairy Structural Adjustment Program provided direct payments worth $1.63 billion (to 30 June 2007) to dairy producers who held an interest in a dairy farm enterprise before the restructuring. Additional assistance was provided through the Supplementary Dairy Assistance program.

The Dairy Exit Program provided an optional tax-free exit payment of up to $45 000 for eligible dairy producers who wanted to leave the industry.

The Dairy Regional Assistance Program provided $65 million to help regional communities adjust to dairy deregulation—for example by supporting business investment, community infrastructure development or providing community access to training and counselling services.

The *Securing our Fishing Future* package

In 2005, the Australian Government directed the Australian Fisheries Management Authority to take action to halt overfishing and to increase compliance and monitoring activities.

The Government announced the $220 million *Securing our Fishing Future* package to address the impact of those measures on the industry. The package included business exit assistance to the value of $149 million, which gave operators a once-off opportunity to either exit the industry or rationalise their businesses.

Grants of $3000 to $5000 were provided for skippers and crew members who lost employment as a result of their employer taking business exit assistance, to help offset the costs of job-seeking, retraining or relocation.

The package also included assistance for ongoing or new businesses in the onshore sector, as well as for the start-up of new non-fishing businesses. Funding of $20 million was provided for fishing community assistance to aid projects deemed to be capable of generating local economic activity and opportunities in communities that handle fish caught in Commonwealth-managed fisheries.

Assistance should promote adjustment

The transition to a low-carbon future is likely to require significant structural change in the Australian economy. Trying to prevent that change through assistance measures that sustain industries that need to adjust will impose higher costs on the Australian community. Change should be allowed to occur and the Government should provide targeted assistance to those who carry the burden of adjustment. The cost of providing well-designed and targeted assistance for particular workers, communities and regions is also likely to be lower.

In designing adjustment assistance measures for workers, communities and regions, the Government should seek to do so in a way that promotes their adjustment to the scheme, rather than by seeking to prevent or hinder that adjustment.

Assistance should be provided as necessary

A clear and sizable burden of adjustment is most likely to occur in cases where large, emissions-intensive facilities close, particularly where those facilities are in regional communities with a limited actual or potential employment base.

The preferred positions proposed by the Government in Chapter 9 provide many emissions-intensive facilities with assistance from the Government. The assistance is intended to support continued production by emissions-intensive trade-exposed industries in Australia. Where it is efficient for those industries to remain in Australia, the assistance would reduce the need for adjustment by the workers, communities and regions dependent on them.

By contrast, domestic industries do not face the threat of carbon leakage, and the assistance measures considered in this chapter are not necessarily intended to keep particular facilities operating in an unchanged manner, or to support their financial position indefinitely where that runs counter to the long-run abatement imperatives.

Despite the differences in the assistance proposed for these two types of industries, it is possible that facilities in either category will be closed after the introduction of the scheme. It is also highly likely that closures unrelated to costs imposed by the scheme will be attributed to the introduction of the scheme.

It also cannot be ruled out that the move to a low carbon environment will result in entities in industries that do not receive any assistance from the Australian Government deciding, in the longer term, to close major facilities, with resulting impacts for workers, communities and regions.

The Government's assessment of the need for assistance to workers, communities and regions affected by a closure or significant structural change in an industry should not be affected by the earlier provision of assistance to entities in that industry.

Rather, assistance should be provided as necessary where a clear and sizable burden of adjustment is placed on an identifiable segment of the community.

On this basis, it is appropriate for the Government to provide assistance to workers, communities and regions regardless of whether the assistance is required for workers in

emissions-intensive trade-exposed industries or strongly affected industries that have received assistance from the Government, or for workers in industries that have not received such assistance.

If assistance is required for workers, communities and regions dependent on the coal-based electricity generation sector, the Government has a disposition to provide this assistance through the Electricity Sector Adjustment Scheme (see Section 10.5). Other workers, communities and regions will be able to be supported through similar assistance under the Climate Change Action Fund discussed in Chapter 12.

10.4 Preferred position

The Government would address particular impacts of the scheme on workers, communities and regions. Assistance would:

- take into account the existence of generally applied measures that assist structural adjustment in all sectors (such as social security and employment policies)
- be provided where a clear and sizable burden has been, or is highly likely to be, imposed on an identifiable segment of the community
- be designed to assist the adjustment of workers, communities and regions to their new circumstances, rather than to prevent or hinder that adjustment
- apply, as necessary, regardless of whether an affected industry has received support as a strongly affected or emissions-intensive trade-exposed industry.

10.4 The rationale for direct assistance to coal-fired electricity generators

The Government considers that it is likely that coal-fired electricity generators satisfy the characteristics of a strongly affected industry outlined in Section 10.1. In light of the substantial commitments outlined in Section 10.3 to assist the coal-fired electricity generation sector transition to a low-carbon future, the Government must consider whether there are sufficient grounds for providing further assistance to the industry in the form of direct assistance to individual coal-fired electricity generators.

This section identifies a number of possible reasons why the Government might consider providing further assistance to coal-fired electricity generators.

Three main rationales for providing assistance to coal-fired generators have been raised in previous scheme proposals or by stakeholders:

- the energy security implications of direct assistance
- fairness
- the effect of direct assistance on the investment environment.

10.4.1 Energy security implications of assistance

Energy security has three components:

- adequacy—the provision of enough energy to support economic and social activity
- reliability—the provision of energy with minimal disruptions
- affordability—the provision of energy at a price that does not reduce the competitiveness of the economy and that supports continued investment in the energy sector.

The Government is mindful of energy security concerns relating to the introduction of a carbon constraint. A history of secure energy supply underpins Australia's current prosperity and international competitiveness: the introduction of emissions trading should not diminish this advantage.

For this reason, the Ministerial Council on Energy (MCE) has agreed that the Australian Energy Market Commission (AEMC) will conduct a review of the energy market frameworks in light of the introduction of ethe scheme and the renewable energy target. This review is to determine whether the frameworks need to be amended to accommodate these policy developments.

In directing the AEMC to undertake this work, the MCE recognised the importance of engaging with the energy sector in reviewing the energy market frameworks and has requested the AEMC to establish an Advisory Committee comprising relevant segments of the energy supply chain. The AEMC may identify possible energy market specific measures that can address the impact of the scheme on energy security.

In relation to the scheme itself, the Government considers that the medium-term national target range, and the pace of expected emissions reductions, will have the greatest bearing on energy security. When setting the medium-term national target range, the Government will be mindful of the speed with which the economy generally, including the electricity generation industry, can adjust.

The Government will seek to ensure a gradual industry transition, avoiding the need for sudden, large-scale retirements of capacity before sufficient replacement capacity can be installed. As discussed in Chapter 4, the Government intends to announce a firm indication of medium-term targets by the end of 2008, after considering the Garnaut Climate Change Review and modelling conducted by the Treasury which is expected to be released in October. No final decisions on emissions targets will be made before stakeholders have had an opportunity to examine this work.

Besides the scheme cap, the next most important scheme design elements that can influence the security of energy supply are:

- the breadth of the scheme's coverage (see Chapter 2)
- the degree of the scheme's international linkage (Chapter 6)
- the existence and level of a price cap (Chapter 3)
- the extent of allowed banking and borrowing (Chapter 3).

In combination, these features can provide the scheme with sufficient 'buffers' that minimise the risk of outcomes that reduce Australia's energy security. By spreading the burden across almost all sectors of the economy, drawing on international sources of abatement, and providing additional flexibility within the scheme, undue pressure on any particular sector can be reduced, providing time for all sectors to begin the necessary adjustment.

Industry stakeholders have put forward several arguments regarding potential impacts of the scheme on energy security that they consider could be addressed through direct assistance to electricity generators:

- By reducing the profitability of electricity generators, the scheme will cause the early retirement of significant generation capacity, reducing the adequacy, reliability and affordability of energy supply.
- By reducing the profitability of electricity generators, the scheme will reduce their ability to fund basic operational maintenance, resulting in more frequent generator malfunctions and reduced reliability of energy supply.
- The scheme may give existing generators incentives to pursue risky short-term contracting and bidding strategies in the electricity market (such as withdrawing from the forward contract market and operating solely in the wholesale spot market), increasing price volatility and reducing the affordability of energy.
- By reducing the profitability of electricity generators, the scheme will reduce their creditworthiness in financial dealings with other parties in the energy industry, exposing those parties to increased financial risk.

As outlined in Box 10.8, the Government does not presently consider that the provision of direct assistance would be a cost-effective way of ameliorating these concerns, nor is it necessarily convinced of the validity of these claims.

However, the Government considers that there are other grounds on which the provision of direct assistance to coal-fired electricity generators may be justified. Issues of fairness and the impact of direct assistance on the investment environment are considered below.

To the extent that stakeholder claims that direct assistance will be effective in addressing energy security concerns, any provision of direct assistance for other reasons would provide incidental benefits for energy security (for example, by improving the creditworthiness of generators).

Compared with the national emissions trajectory and other design elements, the Government considers that the provision of limited direct assistance to the electricity industry is likely to play a lesser role in maintaining secure energy supplies. The provision of unconditional assistance may not materially change the behavioural incentives that generators face. The provision of conditional assistance could create other market problems, depending on how it is structured (see Section 10.5.5). Conditional assistance would need to be designed in a way that is consistent with the economic and environmental objectives of the scheme.

The Government seeks stakeholder feedback on the effect on the security of energy supply of:

- measures specific to the energy market
- the medium-term national target range
- direct assistance to coal-fired electricity generators.

Box 10.8
Energy security issues identified by stakeholders

Early retirement of generation capacity

Some stakeholders have argued that the scheme will compromise the ability of coal-fired electricity generators to cover the high fixed operating and maintenance costs associated with operating these assets. Where a generator cannot cover these costs, it would be rational to retire the asset.

The Government does not consider that direct assistance will materially alter incentives to continue operating a generator where it cannot cover its fixed costs.

Moreover, the Government considers that the risk of significant early retirements of generation capacity is mitigated by a number of factors. For example, if a generation unit retires from service, prices are likely to increase for other generators, increasing the incentive for them to remain in service.

Further, the time profile of maintenance costs is not constant, but varies significantly in accordance with the maintenance cycle of each individual unit. A decision to retire an individual unit may depend largely on the timing of significant periodic maintenance costs, rather than the level of 'day-to-day' maintenance costs. This is significant, as large coal-fired power stations typically consist of four to eight generating units and the retirement of these units may be 'staged' over time.

The Government seeks information from stakeholders on the role of periodic maintenance costs in affecting the timing of the retirement of existing emissions-intensive generation units, and the associated energy security implications.

Reduced asset maintenance

Some stakeholders have argued that the reduced profitability of particular assets will compromise the ability of the owners of those assets to fund necessary maintenance.

Again, it is unlikely that direct assistance will materially alter incentives to undertake maintenance. If the scheme reduces the expected operating life of the asset, then the owner has an incentive to reduce maintenance expenditure accordingly. Direct assistance would only change the amount of maintenance undertaken if the owner was prepared to use the assistance to fund otherwise unprofitable maintenance. This is unlikely to occur unless the owner was compelled to do so.

Box 10.8
Energy security issues identified by stakeholders (continued)

Increased price volatility

It is possible that the scheme will change the contracting and bidding strategies employed by generators in the NEM. Some stakeholders have argued that the wealth impacts of the scheme may give some generators greater incentive to withdraw from the forward contract market and bid their generation capacity into the NEM's wholesale spot market at prices well above operating cost. Such strategies could increase wholesale price volatility and adversely affect competition in retail electricity markets.[18]

Ordinarily, a large electricity generator may be dissuaded from pursuing a sustained high-price bidding strategy because of the threat that high prices will trigger new entry into the market. However, the scheme could shorten the operating life of an emissions-intensive asset and reduce the significance of the threat of new entry.

Direct assistance is unlikely to significantly affect a generator's behaviour where its incentives are driven by the impending retirement of an asset.

Reduced creditworthiness

Generators and retailers typically trade hedge contracts that fix or otherwise constrain the price of a large proportion of the electricity they buy and sell in the NEM's wholesale spot market. If one party is unable to make payments in accordance with a hedge contract, the counter-party becomes financially exposed.

The electricity industry is concentrated. As a result, stakeholders have argued that a failure of one generator to make hedge payments could flow through that generator's counter-parties to a high proportion of entities in the market, especially to electricity retailers.

However, the extent to which this risk could spread through the electricity market is unclear. Many hedge counter-parties will have obtained security as part of the hedge agreements in the form of credit guarantees from large financial entities or parent companies, spreading the risk beyond the Australian electricity market and improving the likelihood that it will be absorbed.

10.4.2 Fairness considerations

Coal-fired electricity generators are likely to experience significant negative wealth impacts. Were it deemed appropriate, the simplest way for the Government to ameliorate this would be to provide for offsetting direct wealth transfers.

However, the case for direct assistance to offset wealth transfers from coal-fired electricity generators on pure fairness grounds is neither simple nor clear-cut. Arguments based on fairness and equity are inherently subjective.

Box 10.9 outlines the considerations of the Task Group on Emissions Trading (TGET), NETT and the Garnaut Review.

Box 10.9
TGET, NETT and Garnaut Climate Change Review on the objectives of assistance

TGET noted that 'in any emissions trading scheme, the allocation of permits can be used as an instrument to share the cost of the emissions constraint more fairly across the economy …'.[19]

NETT argued that 'the guiding equity principle for permit allocation should be to assist those who would otherwise be most adversely affected by the introduction of the scheme'.[20]

TGET and NETT both recognised that the scheme would affect many segments of the community but concluded that only firms that were likely to experience a disproportionate loss in asset value should receive assistance to mitigate that loss on the grounds of equity.

The Garnaut Review also considered this issue from the perspective of fairness and equity, but noted that 'alternative forms of assistance such as structural adjustment assistance [are] likely to provide a greater benefit to the overall economy than a backward looking, private compensatory payment to existing emitters'.[21]

Ameliorating wealth transfers that arise as a consequence of the scheme is a discretionary decision for government. Governments are not generally obliged to offset wealth impacts that result from changes in the law, which often have distributional consequences.

Any direct wealth transfer would have to be at the expense of someone else. This could include reduced assistance for households or entities in emissions-intensive trade-exposed industries, or a transfer from taxpayers in general. While a change in the asset value of coal-fired generators involves only the owners of the assets, the owners are clearly a subset of households more broadly, including foreign households and households as constituents in jurisdictions where the asset owner is a state government instrumentality. The household groups that do not hold a stake in coal-fired electricity generation assets also have a claim to transfers on fairness grounds.

In assessing fairness and whether assistance measures are justified, the Government needs to take into account a range of factors, including but not limited to:

- the policy precedents that may be set for future regulatory changes
- the extent to which a carbon price was a readily foreseeable risk
- the treatment of entities in other policy areas, where previously unpriced natural resources were priced, either explicitly or through new regulations on use
- the extent to which owners of electricity generation assets have diversified portfolios, including assets within the electricity industry that are advantaged by a carbon price.

These complicating factors suggest that at the very least, arguments to provide assistance on grounds of fairness are not clear cut.

10.4.3 The effect of assistance on the investment environment

The existence of significant wealth transfers from the owners of particular assets, and perceptions about the way the Government will regulate the investment environment, can also have broader economic implications.

Investor assessments of risk have economic consequences. While assessments of risk and return to a particular investment are primarily based on a forward-looking analysis of the merits of the investment, regulatory and other experiences can shape investor expectations.

Uncertainty about possible changes in the law is a source of risk that entities in any industry must manage. The introduction of a carbon constraint is one such risk.

If investors saw this change in the law as large and arbitrary, it could increase their belief that similar changes, and the resulting wealth impacts, are possible again in the future. Some stakeholders have suggested that this perception could affect assessments of the risk of investing in the Australian electricity generation industry.

That said, the introduction of the scheme will also make a positive contribution to investor certainty in the sector, by providing a clear and robust regulatory framework for the reduction of greenhouse gas emissions, with clear price signals to inform business investments. The TGET report highlighted this issue, and noted that delaying the imposition of a carbon constraint would impose costs by increasing business uncertainty and delaying or losing investment.

The report noted evidence that investment in key emissions-intensive industries and energy infrastructure was being deferred, and that declaring that Australia would not adopt emissions trading was unlikely to reduce uncertainty.[22]

This highlights the challenges in assessing the impacts of a change in law on asset values. Assessing changes in asset value are also difficult given there is a lack of regular trading or exchange in these asset classes. This presents challenges for policy makers in determining whether and when the market priced in the possible value consequences of the introduction of a carbon constraint.

Foreseeable regulatory change

The extent to which asset value changes resulting from a change in the law would be considered large and arbitrary would depend partly on whether the change in law itself was foreseeable. If investors factored in some risk that asset values might be affected by a future carbon price, asset value changes are less of a problem, even though the policy change crystallises the risk in a lower asset value. Indeed, the absence of the policy change would allow ongoing high (above normal) profits. Conceptually, the issue then becomes an empirical assessment of the discount rate used at the time of the investment to allow for the risk of the policy change.

The Government would be interested in evidence demonstrating how discount rates incorporated the risk of such a regulatory change, particularly in audited and verifiable assessments made at the time.

These assessments would presumably also recognise that, where higher discount rates were used, a component of the higher rate would be due to uncertainty about the

level of the possible carbon constraint over time, rather than risk relating to the likely implementation of the carbon constraint per se.

Arguably, there has been some risk of policy change in the area of climate change for some time. Internationally, the United Nations Framework Convention on Climate Change (UNFCCC) was signed in 1992 and entered into force in 1994. This Convention required parties to take action on climate change but did not involve mandatory targets. The Kyoto Protocol was signed in 1997 and included mandatory emissions reduction targets for industrialised countries. However, the Protocol only came into force in 2005 following ratification by sufficient parties to the Protocol and did not become binding on Australia until the Australian Government's ratification of the Protocol came into effect on 11 March 2008.

Various policy proposals at the Australian Government and state government levels have been developed during the period of evolution of these international agreements, including a suite of greenhouse gas abatement programs and regulations. In the light of these developments, some stakeholders have suggested that the development of policy change in this area has been to some extent foreseeable.

However, the Government must consider these arguments carefully and assess the extent to which this policy change was indeed foreseeable.

Investor perceptions of risk

If the introduction of the scheme creates unanticipated and significant wealth transfers, and those impacts are not recognised in some way by the Government, it is possible that investors would assess the risk of future regulatory changes more pessimistically than if the impacts were ameliorated to some extent.

On this basis, the Government considers that there is an unquantifiable risk that a lack of direct assistance to those entities in the electricity generation industry that are most adversely affected by the scheme will increase risk assessments for future investments in the industry. If this occurred, it could undermine the ability of the industry to deliver lower-emissions technologies while continuing to meet Australia's growing electricity demand.

Increased risk for investors in the industry would increase the cost of energy, as new investments would require a return sufficient to cover a higher risk premium than previously, purely because of greater uncertainty about regulatory settings. In extreme cases, particular investments could be delayed or abandoned, potentially affecting energy security.

On balance, there is some case for the Government to provide limited direct assistance to coal-fired electricity generators as an appropriate measure to partially ameliorate the most acute impacts of the scheme on particular entities. This assistance is expected to reduce the impact of the scheme on assessments of the risk of investing in the Australian electricity generation sector and underpin the investment environment in the sector.

10.5 Preferred position

To ameliorate the risk of adversely affecting the investment environment, the Government proposes to provide a limited amount of direct assistance to existing coal-fired electricity generators.

10.5 The Electricity Sector Adjustment Scheme

The electricity sector, in particular coal-fired generation, will face particular challenges as a result of the scheme. The Government has identified the coal-fired generation sector as a strongly affected industry, and proposes support comprising three core elements outlined in this chapter, namely:

- Support for the development and deployment of CCS technologies, including through existing CCS support programs
- Commitments to address particular impacts of the scheme on workers, communities and regions through various structural adjustment assistance packages as required
- Direct assistance to coal-fired generators.

The Government has a disposition to deliver this support, in part through a new fund called the Electricity Sector Adjustment Scheme (ESAS).

An integrated strategy, with the ESAS operating alongside the Government's existing programs, such as the National Clean Coal Initiative, would deliver comprehensive support to the coal-fired generation sector, and workers, communities and regions dependent on it, by:

- Underpinning investor confidence in the electricity generation sector
- Facilitating structural adjustment for individual firms, workers, communities and regions
- Ensuring security of energy supply – including through measures which facilitate adaptation to low emissions production (eg. clean coal technology, and through research and development into energy efficient production systems).

The primary mechanism for delivering support to the development and deployment of CCS technologies will be the National Clean Coal Initiative, as outlined in Section 10.3.

Funding for other measures to facilitate the transition of firms through adaptation to low emissions production will need to be carefully designed taking into account the outcomes of the Wilkins Review and the COAG complementary measures sub-group. It will be necessary to foster appropriate behavioural change in response to the carbon price, and adopt measures that do not hinder the effective operation of this price. Measures will be designed and supported only after evidence-based assessments of options, with support provided where there are net benefits to the community.

Assessment criteria will be developed that require there be clear, identifiable and significant benefits that will flow from additional government support, that are cost-effective, when considered alongside the range of other government programs in place.

Consistent with the support outlined under the complementary fund –the Climate Change Action Fund–Government support under the ESAS will recognise the need to assist firms and workers in the most affected industries manage and smooth their transition to the new environment in a sustainable way.

Structural adjustment assistance for affected workers and communities in the coal-fired electricity generation sector will be delivered through the ESAS rather than the CCAF.

This assistance will adopt similar design principles to those applying to structural adjustment assistance contemplated under the CCAF, namely that any measures:

- take into account the existence of generally applied measures that assist structural adjustment in all sectors (such as social security and employment policies)
- be provided where a clear and sizable burden has been, or is highly likely to be, imposed on an identifiable segment of the community
- be designed to assist the adjustment of workers and regions to their new circumstances, rather than to prevent or hinder that adjustment
- apply, as necessary, regardless of whether particular firms in the coal-fired generation sector have received support.
- In addition, direct assistance to coal-fired generators may consist of direct payments or free carbon pollution permit allocations to firms in this sector delivered through the ESAS. The specific options around allocation principles and criteria are detailed below, including the Government's design choices on:

- the appropriate quantum of assistance
- to whom assistance should be provided
- how the assistance would be distributed between recipients
- the form the assistance should take.

10.5.1 Determining a quantum of assistance

The Government could determine a quantum of assistance before or after deciding on the medium-term national target range.

The Government intends to announce a medium-term national target range by the end of 2008, after considering the Garnaut Climate Change Review and modelling conducted by the Treasury.

The emissions trajectory associated with this target range will be a key input for assessing the likely impact of the scheme on the electricity generation industry in general, and on individual assets. The level of the scheme caps in the early years of the scheme will materially affect the change in profitability of entities in the electricity generation sector.

On this basis, it would be prudent for the Government to determine a quantum of assistance after deciding the medium-term national target range.

The Government's considerations of an appropriate quantum of assistance may be usefully informed by detailed, quantitative, 'bottom-up' modelling of the major electricity markets in Australia. The modelling will be more informed if it is done with a known trajectory. Some stakeholders have already discussed the outcomes of specific electricity market modelling during consultations to date, and this analysis is welcome. Further consultations on these issues will be necessary as scheme details and the emissions trajectory are finalised.

There are a range of specific electricity market models that can be used to evaluate the impacts of the scheme on the industry. However, those models are often very sensitive to the assumptions made. Seemingly small changes in modelling assumptions can lead to very large changes in estimated impacts. For this reason, the Government considers that electricity market modelling should be regarded as only one input among many in determining an appropriate quantum of assistance.

NETT and TGET developed their respective proposals for compensation for 'disproportionate loss' by reference to the expected level of loss experienced across the economy (see Box 10.10).

Box 10.10
TGET and NETT considerations of an appropriate quantum of assistance

TGET and NETT both considered that firms that suffered a 'disproportionate loss' should receive 'compensation'. Such an approach requires an assessment of:

- the extent of loss experienced by a given entity or industry
- the extent of loss experienced across the economy
- the relative size of these two losses, to asses the extent to which the loss experienced by a given entity or industry is 'disproportionate'.

TGET proposed that compensation be provided to eligible entites through a free allocation of permits of a value 'broadly equivalent to the excess loss of value—that is, the amount by which the loss exceeds a benchmark loss'.[23] TGET indicated that this benchmark loss might be equal to an expected economy-wide level of loss. TGET suggested, but did not firmly recommend, that a significantly larger than average loss could be determined by modelling economy-wide losses under an emissions trading scheme, and comparing those losses to the predicted impact of the scheme on a particular entity.

NETT similarly considered that assistance should be provided to offset 'losses that exceed the estimated economy-wide level of loss'. [24] NETT suggested that economy-wide modelling could be used to estimate reductions in rates of return on capital across all industries over the first 20 years of operation of an emissions trading scheme, and could be compared to rates of return over the same period in the absence of a scheme, to determine an economy-wide level of loss.

With different degrees of detail, both NETT and TGET outlined approaches to estimating in advance the likely level of loss experienced by individual entities or assets, in net present value terms, so as to compare with the 'benchmark' or 'economy-wide' level of loss.

The Government may consider the possible quantum of assistance against competing claims for assistance.

The Government recognises that assistance to households, particularly low-income households, is appropriate in the light of the expected price impacts of the scheme.

Similarly, the Government has identified that competitiveness issues and the risk of carbon leakage requires assistance to be provided to entities in emissions-intensive trade-exposed industries.

As with other forms of assistance and government expenditure, the Government must be convinced that the expenditure of public resources is warranted by the overall return to the community.

The scheme is expected to affect some less emissions-intensive electricity generation assets positively, where those assets can increase the margin they earn on their production or increase the volume of their production.

Investors that have diversified their generation portfolio to manage carbon and other risks are likely to offset some of the losses experienced by particular assets with gains to other assets.

The extent of offsetting gains that existing assets in the industry will experience may be a relevant consideration in the Government's final decisions on an appropriate quantum of direct assistance for the electricity generation industry as a whole (but not necessarily for individual entities). Such a consideration might limit the amount of direct assistance that the Government provides to coal-fired electricity generators.

Capital-intensive entities such as electricity generators may also have deductions available to them under the tax system for the decline in value of their depreciating assets. Those deductions (known as 'capital allowances') are available over the effective economic life of a given asset.

The tax system may allow an entity suffering a loss in asset value to bring forward the timing of the tax benefit it receives from its depreciating assets by:

- selling or otherwise disposing of the asset
- permanently ceasing to use the asset
- permanently ceasing to have the asset installed and ready for use

or

- recalculating, on a prospective basis, the effective life of a depreciating asset due to changed circumstances relating to the asset.

Effective use of these mechanisms will not alter the nominal value of the tax benefits available to such entities, but their effective value to the entities can be increased by bringing forward the timing of when they are used. This value may also be a relevant consideration for the Government when determining a quantum of assistance to coal-fired electricity generators.

10.6 Preferred position

Final decisions on an appropriate quantum of the proposed direct assistance for coal-fired electricity generators would be made after the medium-term national target range is established.

10.5.2 Eligibility for assistance

The Government may wish to limit the provision of assistance to those coal-fired electricity generators that demonstrate a stronger case for assistance than others.

Time limitation on eligibility

The risk of an imposition of a carbon price on emitting entities in the Australian economy has emerged over time, rather than materialising at a single moment. Views differ on when investors in emissions-intensive assets could have reasonably expected a carbon price to be imposed. Different investors will have assessed, and reacted to, this likelihood differently in the light of the same information.

Nevertheless, for simplicity, the Government must define a single point in time that approximates the emergence of knowledge that the scheme or an equivalent carbon constraint would be introduced and that can be used to limit eligibility for assistance (the 'eligibility cut-off date'). The date reflects the point in time after which it would be unreasonable to argue that investors had no knowledge of the future imposition of a carbon constraint.

Box 10.11
NETT and TGET considerations

TGET argued that 'after the date of announcement of an intention to proceed with emissions trading, decisions to invest would be taken in the knowledge of the impending introduction of a price on carbon. Such investments should not be eligible for compensation'.[25]

NETT suggested 3 June 2007 as one possible cut-off date for eligibility for compensation, on the basis of the former Prime Minister's announcement to this effect. However, NETT did not offer a firm opinion on the merits of choosing that date, emphasising that 'any cut-off date will be essentially arbitrary, and will have different implications for different project proponents and jurisdictions'.[26]

Possible eligibility cut-off dates are the days when:

- the UNFCCC entered into force (21 March 1994)
- the Kyoto Protocol was adopted (11 December 1997)
- the Kyoto Protocol came into force (16 February 2005)
- the state premiers and territory chief ministers agreed to implement an emissions trading scheme by 2010 in the absence of Commonwealth action (9 February 2007)
- the introduction of the scheme became the policy of both major Australian political parties (3 June 2007)
- this green paper was released (16 July 2008).

On balance, the Government considers that the day on which the introduction of a carbon price became bipartisan policy in Australia—3 June 2007—is the point beyond which investors could not reasonably argue that they had no knowledge of a potential

carbon constraint. Naturally, many investors would have factored in the risk before this date.

Defining an asset 'in existence'

The Government must define the criteria an asset must satisfy to be considered to have been 'in existence' at 3 June 2007. Assets that were in existence on 3 June 2007 would be eligible for assistance.

A new asset may not have been in operation on 3 June 2007, but sufficient commitment had already been made to its construction that the proponent could not reasonably be expected to alter its investment plans in the light of the new information about the Australian Government's policy intentions. In such a circumstance the Government considers that it would be appropriate to deem such assets to be 'in existence' as of 3 June 2007.

NEMMCO assesses new generation projects to determine which projects are 'committed' for the purposes of power system planning in the NEM. The NEMMCO criteria for a 'committed project' are set out in the National Electricity Rules (see Box 10.9). The same criteria can be applied to generation assets in other markets, such as the WEM. NETT endorsed these criteria as an appropriate measure of whether an asset that was planned or under construction was 'in existence' at a particular date.

Box 10.12
Criteria for a 'committed project'

Committed project means a project that NEMMCO considers has been fully committed by the project proponent taking into account the following factors:

- the project proponent's rights to land for construction of the project;
- whether contracts for the supply and construction of the project's major plant or equipment, including contract provisions for project cancellation payments, have been executed;
- the status of all planning and construction approvals and licences necessary for the commencement of construction of the project, including completed and approved environment impact statements;
- the level of commitment to financing arrangements for the project; and
- whether project construction has commenced or a firm date has been set for it to commence.

Source: National Electricity Rules, version 21, 1 July 2008, Clause 11.10A.1, published by the Australian Energy Market Commission.

The Government considers that these criteria are clear enough to provide certainty about potential eligibility for direct assistance to proponents of recently committed coal-fired generation assets.

Further issues may arise for assets that were in operation on 3 June 2007, which are retired from service after that date but before the delivery of assistance. These assets

may be entitled to assistance on the basis of their operational status at the eligibility cut-off date. By contrast, a coal-fired generation asset that had been taken out of service indefinitely prior to the eligibility cut-off date, but which was capable of being returned to service, may not be entitled to assistance as the retirement decision was made prior to the eligibility cut-off date.

Accordingly, the Government proposes to limit eligibility for assistance to those coal-fired generation assets that were 'in existence' as of 3 June 2007, that is, assets that were in operation, or that satisfied the National Electricity Rules criteria for a 'committed project'.

10.7 Preferred position

Eligibility for the proposed direct assistance for coal-fired electricity generators would be limited to those assets that were 'in existence' as of 3 June 2007, that is, assets that:

- were in operation

or

- satisfied the National Electricity Rules criteria for a 'committed project'.

Defining the recipient of assistance

Some generation assets may change hands between the release of the green paper and the commencement of the scheme. It is important that the Government clarifies which entity (buyer or seller) would be the recipient of any direct assistance.

The Government could direct assistance to the legal entity:

- that the Government deems to be the ultimate owner of the asset

or

- that is registered in respect of a generation asset in the electricity market in which it operates.

The Government's purpose in providing assistance to coal-fired electricity generators is to address the potential impact of the scheme on the investment environment in the Australian electricity generation industry. This purpose would be best achieved by targeting the assistance to those ultimately affected by the changes in wealth—that is, the ultimate owners of those assets.

However, it may not be possible for the Government to identify the 'ultimate' owner of a generation asset with sufficient certainty. The corporate structures of the companies that own generation assets are often complex. Trying to unravel them to reveal the ultimate ownership of an asset could create significant uncertainties both for recipients of assistance and for the Government.

In both the NEM and the WEM, the respective market operators–NEMMCO and the Independent Market Operator of Western Australia (IMOWA)–register entities that own, control or operate individual generation assets.[27] The effect of this is that there is a

readily identifiable registered entity in respect of every generation unit that dispatches into the NEM and WEM.

Where the registered entity is not the ultimate owner of the asset, it is likely that ownership structures or contractual arrangements will ensure that direct assistance flows to the relevant legal entity.

The Government must also determine the point in time at which the relevant entity to receive assistance is identified. The entity receiving assistance could be the registered generator or market generator for an asset as of:

- 3 June 2007 (that is, the proposed eligibility cut-off date)
- the publication of this green paper (July 2008)
- the day an allocation of assistance is delivered.

Allocating assistance to the registered entity as of the proposed eligibility cut-off date may be problematic because some generators or market generators registered at that time might no longer exist. For example, the Queensland Power Trading Corporation was a registered generator as of 3 June 2007 but no longer exists as a legal entity, having been dissolved by the Queensland Government on 19 August 2007.

Allocating assistance as of the publication of the green paper may delay assistance to some entities. Under this approach, assistance would be tied to a legal entity rather than an asset, and any asset sale between July 2008 and the start of the scheme would occur without reflecting the value of assistance attributable to that asset. This would mean that the vendor could not realise the value of assistance in advance through an asset sale, but would have to wait until the actual delivery of the assistance.

Allocating assistance to the registered generator in respect of an asset on the day of delivery of assistance avoids this problem and offers greater certainty, as assistance will clearly be able to be directed to a legal entity that remains in operation and can receive that assistance.

The Government seeks stakeholder views on its proposed approach of giving the proposed direct assistance to the registered generator in the NEM or WEM in respect of particular generation asset, as of the day on which the proposed allocation of assistance is delivered.

10.5.3 Basis of allocation among recipients

There are two main options for the Government to allocate the proposed direct assistance to coal-fired electricity generators. The Government could:

- allocate assistance directly to individual entities on the basis of the total generation portfolio of that asset (the ‘portfolio’ approach)
- allocate assistance in respect of individual generation assets, and thereby to the owner, operator or controller of that asset, independently of the other assets that may be held by that entity (the ‘asset-by-asset’ approach).

As noted above, the impact of the scheme for an entity that owns generation assets will be affected by the extent to which other generation assets held by the entity benefit from the scheme.

On the grounds of fairness, an argument can be made that the extent of offsetting gains for an individual entity is a relevant consideration in allocating assistance to that entity. This argument would support the use of the portfolio approach.

However, the portfolio approach may have perverse effects that reduce the economic efficiency of the scheme. NETT noted that the portfolio approach could create perverse incentives for asset owners to restructure their holdings. If assistance to 'losing' assets were to be offset by the extent of gains expected for 'winning' assets, an entity would have an incentive to create separate corporate structures, or to sell assets, in order to create a pure 'winning' portfolio and a pure 'losing' portfolio.[28]

The portfolio approach also creates potential fairness problems by penalising those investors who have managed the risk of carrying highly emissions-intensive assets by purchasing or constructing lower-emissions assets to balance their portfolios.

Furthermore, the portfolio approach is likely to be administratively difficult. The ultimate ownership of a given generation asset might not be directly revealed by the identity of the generator registered for that asset by NEMMCO, or the IMOWA. Complex corporate structures may obscure the true portfolio holdings of owners of generation assets.

By contrast, an asset-by-asset allocation offers greater clarity, as it does not require complex assessments of corporate structures to determine ownership shares and portfolio holdings.

Three broad options could be used for asset-by-asset allocation:

- in proportion to the impact of the scheme for individual assets, as predicted by a quantitative electricity market modelling exercise conducted before the introduction of the scheme (the 'bottom-up modelling' method)
- according to a schedule agreed by relevant industry stakeholders (the 'industry-sponsored' method)
- according to relatively clear and observable characteristics of individual generation assets (the 'simple asset-by-asset' method).

The bottom-up modelling method

The impact of the scheme on individual electricity generation assets is hard to predict before the scheme begins, given the complexity of the electricity market and the number of variables in any projection.

Detailed electricity market models can be used to take into account a number of technical variables of individual generation assets that are relevant to predicting the impact of the scheme on those assets, including:

- emissions intensities
- current and expected future fuel costs

- operational and maintenance costs
- transmission losses and constraints
- the competitive implications of bidding and contracting behaviour.

A large number of unknown variables, such as changes in fuel prices or future investments in new generation capacity or transmission infrastructure, must be employed in any modelling exercise.

The uncertainty inherent in results from modelling may render those results inadequate as a stand-alone basis for Government decision-making about the distribution of assistance to individual entities. There is a risk that modelling will predict significant variations in impact, and therefore in assistance, between similar assets. Such variations may not be defensible on the grounds of fairness, given the uncertainty of predicting the precise impact of the scheme.

The complex operation of these models could reduce the accountability and transparency of the allocation.

For these reasons, the Government does not prefer the bottom-up modelling method.

The industry-sponsored method

Taking a more qualitative approach to considering the relative merits of different assets for direct assistance would allow other factors to be considered in predicting the likely impact of the scheme on different assets.

Industry stakeholders may be better placed than the Government to assess an appropriate share of a given quantum of assistance for any given asset. This approach might require a suitable industry association to put forward a model for intra-industry allocation of a pre-determined quantum of assistance. The allocation would not occur on this basis without consensus across the association.

However, it would be difficult for the Government to be confident that a particular industry-sponsored allocation schedule fairly reflected the views of the industry as a whole. Smaller players might not be able to put their case for assistance effectively. The accountability and transparency of the Government involving an industry association in its decision-making in this way could be questioned.

This approach might also divert industry resources from identifying and exploiting economically efficient abatement opportunities.

For these reasons, the Government does not prefer the industry-sponsored method.

The simple asset-by-asset method

Generation assets have characteristics that can be used as a proxy for the predicted impact of the scheme on an individual asset and that are relatively clear and observable.

Coal-fired generation assets vary in emissions intensity. The impact of the scheme is likely to be greater for more emissions-intensive assets. Reasonably accurate information

on the emissions intensity of individual assets can be obtained and could be used to adjust the assistance given to individual assets.

Another relevant characteristic is the maximum output of a generation unit, or generation 'capacity'. Larger coal-fired electricity generators generally have higher asset values and produce more electricity. Any general loss in profitability across all coal-fired generation assets is likely to be experienced by an individual asset in some relation to its generation capacity.

Individual assets vary in their total output depending on how efficiently they are used. Electricity output is a function of an asset's capacity and its 'capacity factor'—that is, the average percentage of its capacity that it generates over a period of time. Different assets of the same capacity may have different capacity factors and outputs, and losses might be estimated to be more correctly in proportion to output than to generation capacity.

These three characteristics of generation assets may be sufficiently observable and reflect the likely impact of the scheme on individual assets well enough for them to be applied in some combination to allocate assistance to individual assets in a way that is accountable and transparent.

The simple asset-by-asset method is the Government's preferred approach to allocating assistance between recipients. In reaching this conclusion, the Government is mindful of the need to avoid false precision. The overall quantum of assistance will involve a large degree of judgment, as will the distribution of the assistance. Attempting to offset the scheme precisely would require the Government to know various factors that cannot be reliably observed or determined, such as which investors took into account the possibility of carbon constraint and how this affected their investment decisions.

10.8 Preferred position

The proposed direct assistance for coal-fired electricity generators would be allocated to individual recipients using a simple asset-by-asset method.

10.5.4 A proposed simple asset-by-asset allocation method

The Government could apply a simple asset-by-asset allocation method by considering broadly the emissions intensity, capacity and capacity factor of an asset.

Taking emissions intensity into account

Emissions intensity varies significantly between different coal-fired generation assets. There is a clear difference in the average emissions-intensity of coal-fired assets that use brown coal as a fuel, and those that use black coal, as well as significant variation in emissions intensity within each of these asset classes.

In light of this, the Government has three main options for taking the variability of emissions intensity into account in allocating assistance:

- allocating assistance on the basis of the emissions intensity of each individual generation asset

- allocating assistance to all coal-fired generation assets as though they had identical emissions intensities

or

- splitting the pool of available assistance between 'brown coal' and 'black coal' generation assets.

Using individual emissions intensities for each asset potentially offers a more nuanced way to allocate assistance. However, given the range of other factors that might cause variation in the impact of the scheme between assets, the value of the added detail might not be significant. Furthermore, the Government's selection of emissions intensity estimates for individual generation assets could prove contentious.

Finally, offering assistance on the basis of the individual emissions intensity of generation asset at a point in time would explicitly penalise those generators that had invested to reduce the emissions intensity of their asset before that time, such as by upgrading turbines and boilers to improve efficiency. For example, the turbines in all four generation units at the Liddell coal-fired power station in New South Wales were upgraded between 2006 and 2008, achieving efficiency improvements and emissions intensity reductions.

Allocating assistance to all coal-fired generators as though they had a common emissions intensity offers the benefit of simplicity, but would fail to direct assistance effectively to those generation assets that are likely to be most adversely affected by the scheme.

Brown coal, such as that mined in Victoria, has a higher water content and lower energy content than black coal, resulting in significantly higher carbon dioxide emissions per unit of electricity produced. The broad impact of the scheme will be greater on brown coal assets than on black coal assets, although the extent of this difference is not entirely clear.

The Government considers that the best compromise between precision and fairness may be to split the available quantum of assistance between black coal and brown coal assets in order to better reflect the higher emissions intensity of brown coal assets.

The Government also considers that an appropriate method for determining the relative proportion of the two pools may be to estimate the relative impact of the scheme on brown and black coal assets using the broad results of a bottom-up electricity market modelling exercise.

Definitional problems can emerge in the creation of separate pools of assistance for black and brown coal assets. For example, black coal mined at Leigh Creek in South Australia for use in electricity generation is low quality, and its energy content could be compared to Victorian brown coal. However, the high emissions-intensity of the South Australian coal-fired generation assets appears to reflect their efficiency as well as the quality of the coal they use.

Not all assets are exclusively fired on a single fuel. For example, the Kwinana C units in Western Australia can be fired on oil, natural gas or coal, while the Kwinana A units can be fired on coal or natural gas. As these assets are able to be fired on either coal or a less

emissions-intensive fuel, fuel-switching is a simple abatement option that can reduce the impact of the scheme on that asset.

Accordingly, the Government considers that it may be appropriate to limit allocations of direct assistance to generation assets that are *exclusively* coal-fired.

The Government seeks stakeholder views on:

- whether the relative proportion of the black coal and brown coal pools of assistance should be determined by estimating the relative impact of the scheme on these two asset classes using the broad results of a bottom-up electricity market modelling exercise
- the appropriate definition of brown and black coal for the purposes of allocating direct assistance between assets in the two classes
- whether it is appropriate to limit allocations of direct assistance to generation assets that are *exclusively* coal-fired.

Allocation on the basis of capacity versus output

The two main options available to the Government in deciding how to scale allocations to individual power assets are to allocate on the basis of:

- an asset's capacity

or

- an asset's capacity and capacity factor in combination (that is, its output).

Allocation to generators purely on the basis of capacity ignores the fact that coal-fired generation assets clearly vary in capacity factors, and so assets of similar capacity will also vary in their output.

However, coal-fired generation assets generally provide baseload electricity, and so operate at quite high capacity factors (between 65% and 90%). Although some will operate at higher capacity factors than others, it may be reasonable for the purpose of allocating assistance to assume that, under 'normal' conditions, coal-fired generators will operate at comparable capacity factors.

Adjusting assistance in line with the capacity factor of individual generators would provide a more nuanced approach to the allocation of assistance. However, the capacity factor and output of individual generators can be highly variable over time. Output for a given asset can vary from month to month and year to year in accordance with fluctuations in demand, periodic maintenance, generator malfunctions and other events that can reduce the output of the asset (such as the recent drought, which limited access to cooling water for some coal-fired generators). Historic output baselines over a given period might not reflect 'normal' operating conditions for any individual generator.

Furthermore, it would be difficult to obtain an accurate historical output baseline for newer generation assets that may have been committed on the proposed eligibility cut-off date, but which are only now coming into operation. The Kogan Creek power station

in Queensland came into operation in late 2007, so less than 12 months of historical information is available to derive an output baseline for this asset.

The Bluewaters I coal-fired generation asset in Western Australia may also raise some difficult issues. Construction of this asset began in 2006 but is not expected to be completed until late 2008. An output baseline for the asset cannot be created from its observed production without creating perverse incentives for it to increase output levels before the scheme begins. To avoid this problem, the Government would need to assume an output baseline for this asset, rather than deriving one from observed production.

Given these considerations, the Government considers that it would be simpler and fairer to allocate assistance between assets in direct proportion to their capacity, rather than using a mixture of historical and assumed output baselines for individual assets. The Government considers that this approach is reasonable, given the uncertainty in measuring or estimating capacity factors for different assets, and the fairness and transparency problems that could arise in determining output baselines.

If assistance is be allocated on the basis of capacity as proposed, the Government must also consider the point in time at which the capacity of a asset would be taken as a basis for the allocation.

The Government presently considers that it would be most consistent with the rationale for limiting assistance to those assets in existence on the eligibility cut-off date to apply a capacity-based allocation on the basis of an asset's capacity at that date.

In the case of a committed asset, the capacity of the asset for the purpose of allocating assistance could be the capacity of the asset as planned on 3 June 2007.

There are two main ways in which the capacity of an asset can be calculated:

- 'nameplate' capacity, which is the theoretical maximum output of the asset

or

- 'sent out' capacity, which is the maximum amount of electricity that an asset can export to the grid.

Capacity on a sent-out basis is roughly equal to the nameplate capacity of the asset, less the amount of electricity that is consumed internally in the operation of the asset (its 'auxiliary load').

Providing assistance on a sent-out basis would better reflect the value of the electricity produced by the asset. However, estimates of the auxiliary load of individual generation assets are likely to be contentious. Determining auxiliary loads in a transparent and accountable manner might not be possible.

By contrast, generators register their 'nameplate' capacity with electricity market operators (NEMMCO and IMOWA). Using the registered nameplate capacity of a generation unit offers a more transparent capacity figure for individual assets to use when allocating assistance.

Given the complexity and associated transparency and accountability problems with using a generator's sent-out capacity as a basis for the allocation of assistance, it may

be preferable to use the more transparent nameplate capacity figures provided by NEMMCO and IMOWA.

The Government seeks stakeholder views on whether it is appropriate to allocate direct assistance:

- to assets on the basis of their capacity on the eligibility cut-off date
- on the basis of 'nameplate' or 'sent out' capacity.

10.9 Preferred position

The proposed direct assistance for coal-fired electricity generators would be allocated to individual recipients using a simple asset-by-asset method that involves:

- the available assistance being split into separate pools, with one pool being made available to brown coal-fired assets and the other to black coal-fired assets
- assistance in each pool being allocated to individual assets in direct proportion to the capacity of each asset.

10.5.5 The form of assistance

To reduce implementation risks for the scheme, the method of delivering assistance should be simple and easily administered, and reduce incentives for ongoing lobbying of the Government.

A method of delivering assistance that is easily understood, and that makes clear the value of assistance being offered, will enhance accountability and transparency.

Allocations of cash or carbon pollution permits

There are two main modes of delivery for direct assistance:

- carbon pollution permits
- or
- cash payments.

NETT, TGET and the Garnaut Review have all considered the various merits of allocations of permits or cash. Box 10.13 outlines those considerations.

Box 10.13
NETT, TGET and Garnaut Climate Change Review positions on the form of allocation

NETT and TGET proposed providing assistance to domestic industries through allocations of permits.

NETT based its argument largely on the fact that 'the value of permits is correlated with the requirement for assistance. This means that errors in estimating future reductions in operating profits will be offset, at least in part, by errors in estimating the value of permits awarded'.[29]

In a similar vein, TGET argued that allocations of permits would provide 'an additional natural hedge against future [carbon] prices'.[30]

By contrast, the Garnaut Review has put forward the view that 'whether affected firms access payments in cash or free permits is largely immaterial so long as the cash-equivalent of permits is calculated precisely at the time of payment'.[31]

The Garnaut Review also argued that 'free allocation of permits obscures the value being transferred to recipients'.[32]

As identified by NETT and TGET, an allocation of permits offers a natural hedge because the price of permits is correlated to the impact of the scheme on an emissions-intensive generator. Errors in estimating the price of permits, and therefore the impact of the scheme, will be partially corrected through an allocation of permits rather than a cash payment of an equivalent value at the moment of transfer.

Cash payments rely on accurate estimation of future carbon prices in order to determine an allocation of an appropriate net present value. If the permit price is higher than anticipated, then the Government may face representations from recipients that the value of assistance offered was insufficient.

The Garnaut Review identified transparency benefits associated with cash payments compared with permit allocations as the value of the assistance is readily observable.

The main benefit of a cash payment is that it fixes the agreed quantum of assistance so that it does not alter over time. As noted above, this feature may present risks in terms of recipients attempting to renegotiate support levels where costs deviated markedly from expected levels.

On the other hand, the fixed quantum allows Government to carefully reconsider all competing claims for assistance, and relative burdens, before adjusting support levels in the event that costs deviate from expected levels. This suggests that cash payments can offer Government benefits on public finance grounds, in terms of allowing proper evaluations of competing priorities if the need arises.

The Government seeks stakeholder feedback on the relative merits of providing direct assistance to coal-fired electricity generators through allocations of carbon pollution permits or cash payments.

Conditionality of assistance

The Government must choose whether to provide direct assistance to coal-fired electricity generators in return for recipients complying with certain conditions, or whether assistance should be provided unconditionally.

Generally, any conditionality attached to assistance will encourage the recipient of assistance to undertake the conditional activity at the expense of other activities. For example, if assistance were made conditional on the ongoing production of electricity, the conditionality would increase recipients' electricity generation above the level otherwise determined by the market prices of carbon and electricity.

Conditionality can also increase the cost of achieving a given level of abatement under the scheme by increasing the production of an emissions-intensive good or service, or by encouraging the take-up of high-cost abatement options in preference to lower-cost options.

The Government is open to exploring forms of conditionality that may attach to direct assistance. However, development of policy in this area will need to take account of the risks of certain forms of conditional assistance to the operation of the electricity market.

While direct assistance to coal-fired electricity generators designed to address changes in asset values should generally be provided unconditionally, the Government will consider options for conditional support that would be consistent with the economic and environmental objectives of the scheme and that would further the ESAS objective of ensuring security of energy supply.

The Government seeks stakeholder feedback on possible options for conditional support that would be consistent with the economic and environmental objectives of the scheme, and that would further the Electricity Sector Adjustment Scheme objective of ensuring security of energy supply.

'Up front' assistance versus assistance over time

The Government has two main options:

- determine a quantum of assistance before the scheme begins

or

- allow the final quantum of assistance to be flexible, in response to outcomes under the scheme.

Determining a quantum of assistance before the scheme begins makes clear that coal-fired electricity generators will not be able to affect the amount of assistance they will receive by altering their production decisions.

Conversely, allowing the final quantum of assistance to be changed after the scheme begins creates a risk that generators will perceive that altering their production decisions might increase the assistance they will receive.

The Government might consider that this risk can be offset by the flexibility benefit offered by subsequent adjustments of assistance. For example, the risks of systematic over-allocation of assistance could potentially be affected by adjustment through a claw-back mechanism undertaken after the actual impact of the scheme on recipients has been observed.

Greater than expected gains could be clawed back through such a mechanism. The merit of this approach relies on an assessment of the likelihood of over-allocation of assistance in the light of the expected impacts of the scheme against the potential that the existence of a claw-back mechanism will materially alter generator behaviour.

The Government is concerned to ensure that the lessons of the EU ETS allocation process are heeded in the provision of assistance to coal-fired electricity generators.

While the Government's preferred position on balance is to determine a quantum of assistance before the scheme begins, potential recipients will still need to submit to a review process, to minimise any prospect of windfall gains.

10.10 Preferred position

The quantum of the proposed direct assistance for coal-fired electricity generators would be determined 'up front'—that is, before the scheme begins. However potential recipients will need to submit to a review process to minimise any prospect of windfall gains.

Arguments for 'once and for all' assistance

For possible future rounds of assistance, the Government has two main options:

- commit to providing further rounds of assistance in future

or

decide that assistance will be provided on a 'once and for all' basis to coal-fired electricity generators (even if the assistance is delivered over a number of years).

Box 10.14
14 TGET and NETT views on 'once and for all' assistance

TGET and NETT both supported once-and-for-all provision of assistance to domestic industries. TGET noted that an allocation's 'once-and-for-all nature means that there are no ongoing incentives for emissions baseline manipulation, disincentives for abatement or re-negotiation of allocations'.[33]

In a similar vein, NETT argued 'once-off, up-front allocation[s] ... would not interfere with ongoing incentives in relation to generation or emissions ... reduces the prospect of ongoing lobbying ... [and] gives certainty to investors'.[34]

The impact of the scheme on individual entities or industries may well vary from that predicted in advance of the commencement of the scheme. Changes in technology, input costs, rates of economic growth, international and domestic climate change policy and consumer preferences will all change the way the scheme affects entities and industries.

Given this uncertainty, the Government may wish to consider the possibility of offering future rounds of assistance to strongly affected industries, in the event that the impact of the scheme varies materially from that expected.

An increased likelihood of future rounds of assistance increases the risk that the 'updating problem' experienced in the EU ETS (see Box 10.2) will emerge, and therefore the risk that coal-fired electricity generators will alter their production decisions in the expectation of increasing the quantum of assistance they will receive in future rounds of assistance. This outcome would undermine the economic efficiency of the scheme by discouraging abatement through reductions in production by emissions-intensive generators.

Failure to make assistance to coal-fired electricity generators 'once and for all' could also create implementation risks for the scheme by encouraging ongoing lobbying of the Government.

The Government's preferred position is that further rounds of assistance should not be provided, regardless of whether the outcomes of the scheme (such as the carbon price) vary materially from those predicted before the scheme begins. Importantly, 'once and for all' assistance does not have to be delivered as a lump sum up front, but could consist of an up-front commitment to provide a pre-determined quantum of support over a fixed number of years.

10.11 Preferred position

The proposed direct assistance for coal-fired electricity generators would be provided on a 'once and for all' basis—that is, further allocations of assistance would not be provided after the scheme begins.

When will assistance be delivered?

The Government has many options available for timing the delivery of assistance. An up-front allocation could still be delivered in many different ways over time. While the Government proposes that the quantum of the allocation be determined in advance of the scheme, the delivery of assistance need not be at this time.

Assistance could be delivered after the scheme begins and, if permits are the preferred form of assistance, in the form of permits with different vintages.

The Government cannot determine the quantum of assistance to coal-fired electricity generators until the medium-term national target range is set and it has made final decisions on assistance to emissions-intensive trade-exposed industries and auction timeframes.

For these reasons, the Government does not consider it appropriate to establish a preferred position on the timing of the delivery of direct assistance at this time. The Government will make decisions on this issue at the time the quantum of assistance is determined.

10.12 Preferred position

A decision on the timing of the delivery of the proposed direct assistance for coal-fired electricity generators would be made at the time the quantum of assistance is determined.

Endnotes

1 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007.

2 Analysis conducted by the Department of Climate Change, data sourced from the Centre for Integrated Sustainability Analysis, University of Sydney, 2008. Emissions intensity was obtained using generalised input-output analysis and is consistent with Kyoto Accounting in terms of the coverage of greenhouse gases and sectoral treatment. Emissions intensity is calculated as the sum of direct and indirect electricity emissions relative to the value of revenue for each industry for the year 2001–02. Only Australian-sourced emissions are included. These intensities are calculated under a basic prices valuation in terms of final demand and are provided for the comparison of sectoral performance. They are not applicable to carbon footprinting of companies, projects, investment funds and portfolios, households or consumers. This analysis was conducted prior to the release (in June 2008) of 2004–05 input-output tables. Further details of the data underlying this graph are provided in Appendix D.

3 A sub-sector within input-output sector no. 3601 – Electricity supply.

4 A sub-sector within input-output sector no. 9601 – Other services.

5 A sub-sector within input-output sector no. 1201 – Oil and gas.

6 Input-output sector no. 3602.

7 K Neuhoff et al, *Allocation, incentives and distortions: the impact of the EU ETS emission allowance allocations to the electricity sector*, Climate Policy, no. 6, 2006.

8 Fossil-fuel generated electricity can be used to pump water for later use in hydro generation. In this case, hydro generation is not a zero emissions source of electricity.

9 National Gas Law, *Schedule to the National Gas (South Australia) Act 2008* (SA), section 24(2).

10 Garnaut Climate Change Review, *Interim Report to the Commonwealth, state and territory governments of Australia-February 2008*, Commonwealth of Australia, 2008, p. 52.

11 International Energy Agency, *Energy Technology Perspectives,* p 41, 2008.

12 Australian Bureau of Agricultural and Resource Economics, *Energy in Australia, Commonwealth of Australia*, 2008, p. 14.

13 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008, p. 477.

14 Productivity Commission, *Structural Adjustment – Key Policy Issues*, Ausinfo, 2001, p. 52.

15 Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper-March 2008*, 2008, p. 53.

16 Productivity Commission, *Structural Adjustment – Key Policy Issues*, Ausinfo, 2001, p. 59.

17 Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper-March 2008*, 2008, pp. 53–4.

18 Stakeholders have not suggested that the same potential exists in Western Australia's Wholesale Electricity Market, given the different market rules and commercial constraints in that market.

19 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2008, p. 112.

20 National Emissions Trading Taskforce, Possible *Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007, p. 55.

21 Garnaut Climate Change Review, *Draft Report-June 2008*, 2008, p. 350.

22 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2008, p. 86.

23 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2008, p. 114.

24 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007, p. 63.

25 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2008, p. 115.

26 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007, p. 60.

27 National Electricity Rules, version 21, 1 July 2008, Clause 2.2.1(a), published by the Australian Energy Market Commission; Wholesale Electricity Market Rules, 1 June 2008, Clause 2.28.6, published by the Independent Market Operator of Western Australia.

28 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007, p.65.

29 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007, p. 57.

30 Prime Ministerial Task Group on Emissions Trading, *Report of the Task Group on Emissions Trading*, Commonwealth of Australia, 2008, p. 188.

31 Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper-March 2008*, 2008, p. 40.

32 Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper-March 2008*, 2008, p. 34.

33 Prime Ministerial Task Group on Emissions Trading, Report of the Task Group on Emissions Trading, Commonwealth of Australia, 2008, p. 188.

34 National Emissions Trading Taskforce, *Possible Design for a National Greenhouse Gas Emissions Trading Scheme: Final Framework Report on Scheme Design*, 2007, p. 62.

11. Tax and accounting issues

This chapter discusses preferred positions for the tax treatment of eligible compliance permits and outlines the framework relevant to the financial accounting treatment of such permits.

The introduction of an Australian Carbon Pollution Reduction Scheme will raise a number of tax and accounting issues, including, and in particular, how eligible compliance permits should be treated under the Australian tax laws and Australian Accounting Standards. How such issues are addressed may have a significant effect on the ability of the scheme to achieve cost-effective reductions in greenhouse gas emissions.

While many aspects of the tax system may affect the scheme, this chapter is limited to discussing options for the tax treatment of eligible compliance permits which includes carbon pollution permits and eligible Kyoto units.

The Government will present any proposals for changes to the tax law in exposure draft legislation at the same time as the Carbon Pollution Reduction Scheme exposure draft is released.

The appropriate tax treatment for permits will be influenced by other aspects of scheme design, and will therefore depend on final policy decisions later this year.

This chapter also outlines development in the financial accounting treatment of permits.

- Section 11.1 of this chapter discusses the objectives used to evaluate tax options.
- Section 11.2 outlines the features of the scheme that are integral to the tax treatment of permits.
- Section 11.3 discusses how permits may be treated under the current income tax system and analyses those treatments in the context of the objectives set out in Section 11.1.
- Section 11.4 discusses options for the income tax treatment of permits.
- Section 11.5 discusses the income tax timing issues that emerge with the ability to bank permits.
- Section 11.6 outlines the options for recognising direct government assistance in the income tax system.
- Section 11.7 outlines the way penalties for non-compliance under the scheme would be treated under the income tax system.
- Section 11.8 outlines the preferred approach for the GST (goods and services tax) treatment of transactions under the scheme.
- Section 11.9 outlines the financial accounting framework relevant to the accounting treatment of permits.

11.1 Objectives of the tax system in relation to the scheme

There are two important considerations in designing the tax treatment of eligible compliance permits:

- The tax treatment of permits should not compromise the main objective of the scheme, which is to meet Australia's emissions reduction targets in a cost-effective way and, in doing so, contribute to the development of an effective global response to climate change.
- The tax treatment of permits should incorporate the standard tax axioms of simplicity, efficiency and equity.

The standard tax axioms are consistent with the concepts of economic efficiency and fairness, which are included in the criteria used in this paper to assess different design options (see Chapter 1). A strong emphasis on simplicity will assist with the implementation of the scheme by 2010, by reducing compliance costs for taxpayers and administration costs for the Government.

11.1.1 Cost-effectiveness

The main objective of the scheme is to achieve cost-effective reductions in greenhouse gas emissions. Inappropriate tax treatment has the potential to undermine this objective by distorting decisions about permit purchase, use or sale. It can do this in a number of ways.

First, taxation considerations can affect the decisions that liable entities make about whether to emit or abate. If the default arrangement requires a payment of a penalty for every tonne of CO_2-e emitted, liable entities can use one or more of three broad methods to avoid paying a penalty. They can:

- acquire and surrender an eligible compliance permit
- emit less carbon by reducing or altering production processes
- sequester greenhouse gases to reduce net emissions.

Liable entities will consider the after-tax cost of each method when deciding which to choose. The cost of the scheme may increase if firms abandon what would otherwise be cost-effective actions in favour of actions receiving preferable tax treatment.

11.1.2 Tax neutrality

Where the tax treatment of the three broad methods discussed above are tax neutral, the likelihood of any tax induced distortions influencing an entity's decisions to purchase, use or sell a permit is reduced. In a tax-neutral environment a liable entity would not be influenced by the tax treatment of permits when deciding whether to:

- use or trade purchased permits or freely allocated permits
- acquire and surrender permits or to incur capital expenditure on either sequestering or eliminating the production of an equivalent amount of emissions.

As discussed in Chapter 3, banking and limited borrowing mean that permits can be used or traded when they are most valuable, thus improving the cost-effectiveness of the scheme by increasing market flexibility. However, if there is not also tax neutrality across time, liable entities might not use permits when they would otherwise have the greatest value.

Australia's tax system broadly achieves neutrality over time by generally matching deductions for expenditure to the period in which benefits are received from that expenditure. Where the benefits of expenditure are received wholly in the same income year as the expenditure is incurred, the expenditure is recognised in that income year. If the benefits from actual expenditure extend beyond the income year, the deductions in respect of that expenditure are typically spread over a period. For example, in relation to capital expenditure on depreciating assets, neutral tax treatment is generally achieved by spreading the cost of the asset over the effective life of the asset.

11.1.3 Simplicity

A tax treatment of permits that emphasises simplicity will assist the implementation of the scheme in 2010 and will reduce compliance costs for taxpayers and administration costs for the Government.

Simplicity is about designing law which can be easily utilised by affected taxpayers. A complex tax treatment, which can result from complicated law as well as from high administration and compliance requirements, can make it more difficult to choose between substitutes and to decide whether to use, hold or sell a permit. This difficulty will increase the likelihood of an entity making a less-than-optimal choice, resulting in an increase in the cost of the scheme.

11.2 Scheme features integral to the tax treatment of permits

A number of design features of the scheme will be integral to the way in which permits are treated in the tax system. The analysis provided in this chapter is based on the following proposals:

- Permits will be able to be purchased either directly from the Government through auctions or on a secondary market.
- Some permits may be issued at no cost to entities in emissions-intensive, trade-exposed industries or in strongly affected industries.
- Permits can be surrendered either to meet obligations under the scheme or voluntarily to reduce or remove a carbon footprint when there is no legal requirement to do so. The surrender will extinguish the permits permanently.
- Future-dated permits may also be issued. Subject to any borrowing allowance, it will not be possible to surrender those permits before a permit's vintage year (that is, the first year for which a permit can be surrendered). However, those permits will be able to be traded before the specified year.
- Permits that are not surrendered either voluntarily or in respect of obligations for their vintage year can be banked. Banking simply means setting permits aside for use in a later compliance period. Banking will not change the characteristics of permits in terms of the carbon they represent.

The following section considers how the current income tax system may recognise permits.

11.3 Current income tax law

The starting point for the income tax system is the calculation of a taxpayer's taxable income:

Taxable income = assessable income – deductions.

Assessable income is made up of ordinary income and statutory income. Ordinary income is income in the ordinary sense (for example, wages or salary), and statutory income is defined in the tax law (for example, net capital gains).

There are also two basic types of deductions: deductions under the general deduction provision and specific deductions. A deduction under the general deduction provision is, broadly, an expense incurred by a taxpayer in carrying on a business or other assessable income earning activity and which is not a capital or private expense. A specific deduction is an amount which is deductible under a provision of the tax law other than the general deduction provision.

Deductions for expenses relating to economic benefits that extend beyond the income year in which the expenditure is incurred are generally spread over the period of the benefits by one of a number of methods. An example of this is the treatment of depreciating assets. Such assets provide a benefit to the taxpayer over a number of years, and the deductions are matched to the effective life of the assets.

11.3.1 Treatment of permits under the existing income tax law

For a taxpayer carrying on a business or undertaking other assessable income earning activities, the existing income tax law would recognise the cost of acquiring permits.

The particular treatment and provisions that would apply in any particular case would depend on the precise legal nature of the permits and the entity's purpose in holding a permit, both at the time of purchase and while the permit is held. For example, an entity could purchase a permit:

- to meet an obligation under the Australian scheme
- as part of its trading portfolio
- to surrender voluntarily as part of a marketing campaign
- as an investment.

A permit could also be acquired for private or domestic purposes (for example, to be surrendered voluntarily to offset the carbon footprint of the purchaser's private residence). In such cases the cost would not be deductible under the current tax law.

Permits purchased to meet an obligation

Where an eligible compliance permit is purchased to meet an obligation under the scheme, the cost of the permit may be deductible under the general deduction provision of the income tax law. However, it is not clear when the deduction would be available. The cost could be deductible at the time:

- the permit is purchased
- an obligation under the scheme legally arises
- the permit is surrendered.

Additionally, given the wide definition of an asset for capital gains tax (CGT) purposes, a permit would be such an asset. However, it is unlikely that the surrender of a permit would give rise to a capital gain or loss. This is because no amount would be received on the surrender of the permit, and as the cost of the permit would generally be deductible, it would have no cost base for CGT purposes. Consequently, it is very unlikely that the purchase and surrender of a permit to meet an obligation under the scheme would have CGT consequences.

The tax treatment of a permit could influence the decisions of an entity to buy or sell a permit. If the existing tax law allows a deduction at the time of purchase, this would provide an incentive for an entity to acquire permits. Where a permit is sold the proceeds would be included in assessable income. Allowing a deduction in a different year to that in which the proceeds from sale are treated as income could provide a disincentive for the entity to sell a permit. That disincentive to sell could then reduce market liquidity. This could then lead to a situation where permits are not available to entities for which they have the most value, reducing the cost effectiveness of the scheme.

Permits purchased and held as trading stock

Where a permit is purchased and held as trading stock, the cost of the permit would be deductible, generally at the time that the cost of the permit was incurred. Taxpayers who might hold a permit as trading stock include banks and other financial intermediaries.

The trading stock regime can be thought of as a reconciliation process for stock on hand at the end of the income year. Where a taxpayer purchases trading stock, the tax law would allow a deduction at the time of purchase. However, the trading stock regime also recognises any stock that is still being held by the taxpayer at the end of the income year in which the stock was acquired. The value of that trading stock is reflected in the taxpayer's taxable income. Trading stock held at the end of an income year can be valued at cost, market selling value or replacement value. Any proceeds from the sale of the trading stock are included in a taxpayer's assessable income.

Permits purchased for marketing purposes

A business entity may purchase and voluntarily surrender a permit for promotional or marketing purposes; for example, to market itself as 'green' or to reduce or remove its carbon footprint when there is no legal requirement to do so.

The cost of a permit purchased for marketing or promotional purposes may be deductible in the same way as other marketing costs. However, as is the case for the timing of a deduction arising from a permit used to satisfy an obligation under the scheme, there is uncertainty about the time at which a deduction would be available to a business entity for a permit acquired and surrendered for marketing purposes.

Proceeds from the sale of a permit acquired for promotional or marketing purposes would be taken into account in determining the seller's taxable income.

Permits purchased for investment

Where a permit is purchased for investment purposes, the cost of the investment would not be deductible. However, the cost would be taken into account in determining any gain or loss on the disposal of the permit.

A permit held as an investment cannot provide an income stream while it is being held, but a return will be obtained by disposing of the permit for a profit. If a taxpayer enters into an isolated business or commercial transaction with the objective of acquiring an asset so as to make a profit from the disposal of that asset, any such profit is assessed as ordinary income, rather than as capital gains. Consequently, it is very unlikely that a gain from a permit held for investment purposes would be assessed under the CGT provisions.

11.4 Options for the income tax treatment of permits

Two options that are available for the income tax treatment of permits are:

- to allow the current income tax law to apply
- to amend the income tax law to introduce specific provisions for the income tax treatment of permits.

11.4.1 Application of the current income tax law

While the relevant income tax principles are well established, the application of those principles to particular circumstances may be uncertain. Considerable complexity may arise for taxpayers because a permit can be treated differently when held by different taxpayer types (for example, liable entities and entities that hold permits as trading stock) or when held by the same taxpayer for different purposes (for example, a liable entity holding permits for surrender and other permits for sale). Uncertainty could also arise if a liable entity purchases permits for use, claims a deduction and then realises that too many permits were purchased. In this case the excess permits may be banked until required. If a permit remains banked over a number of years, there may be a change in the purpose for holding the permit. This could affect the tax treatment of the permit. In creating uncertainty, the operation of the current law could lead taxpayers to use financial intermediaries to hold permits, purchasing them only when needed. For some taxpayers, this may not be the most efficient method of meeting obligations under the scheme or managing risk.

Despite the considerable complexity and uncertainty in the application of the current income tax law, it may be argued that, if applied appropriately, the current law would generally lead to the same outcomes regardless of why the permit is held, and so would largely meet the requirement for tax neutrality outlined in Section 11.1.

However, the complexity of the current tax law, with its requirement for careful characterisation based on individual circumstances and the resulting uncertainty that can arise for taxpayers, could create undue compliance costs for taxpayers and administration costs for the Government. While the uncertainty could be managed by a combination of changes to existing law, legal processes to test the treatments in the courts, and rulings by the Australian Taxation Office (ATO), that clarification process would be piecemeal, slow and could still result in considerable uncertainty.

A different approach to overcome these disadvantages needs to be considered.

11.4.2 Development of discrete legislation for the tax treatment of permits

An option for recognising eligible compliance permits which would overcome complexity and uncertainty is to develop new provisions within the income tax law that would apply only to those permits. Such provisions could provide the same general tax outcomes as existing legislation, while reducing the uncertainty and complexity arising from the application of different provisions in the current law. These provisions would:

- allow a deduction for expenditure incurred for the purchase of a permit
- include any proceeds from the sale of a permit in assessable income.

The time at which deductions would be allowed and amounts included in assessable income is discussed in Section 11.5.

Under this approach the CGT provisions of the income tax law would not apply to transactions involving permits. In addition, private or domestic expenditure on permits would not be deductible under this approach.

The benefits of this approach include:

- simple and consistent tax treatment for taxpayers
- removal of the need to characterise the nature of the entity holding the permit and the reason for holding
- removal of tax minimisation opportunities arising because there are different types of holders.

This approach would achieve the tax objectives outlined for the scheme. In particular, business expenditure on permits would be treated consistently, regardless of why the permit was held, thereby satisfying the axioms of simplicity and efficiency. This method would also reduce any tax minimisation opportunities that could otherwise arise and would assist in meeting the objectives of cost-effective reductions in greenhouse gas emissions.

11.1 Preferred position

Discrete provisions of the income tax law would be developed. Such provisions would provide generally the same tax treatment to permits purchased by taxpayers who are carrying on a business or other income-earning activity as would occur under existing legislation, but would provide increased certainty and reduced complexity.

The provisions would allow a deduction for expenditure incurred on the purchase of a permit and include any proceeds from the sale of a permit in assessable income.

11.5 Dealing with timing issues under the income tax system

In addition to considering whether the cost of eligible compliance permits should be deductible, and any sale proceeds assessable, it is also necessary to consider when those costs and proceeds should be recognised for income tax purposes. This is important because permits may be banked and can change in value over time.

Allowing permits to be banked for later use can increase the cost-effectiveness of the scheme, increase flexibility and promote a smooth transition to a carbon-constrained economy. Taxpayers will be able to determine their preferred level of banking for their particular circumstances based on their expectations. The tax system should cause minimal distortions to a taxpayer's preferred level of banking.

Allowing a deduction in the income year that a permit is purchased might not achieve the desired neutrality (as discussed above) and could encourage entities to hold more permits than would be optimal. The potential for a temporal gap between the deduction for the cost of the permit and the recognition of any income from the disposal of a permit could result in permits being used for tax minimisation. If such a gap existed, a tax benefit could arise because the present value of a deduction recognised in an earlier year is greater than the present value of the deduction in a later year.

A tax-neutral outcome is achieved by delaying the effect of the deduction until the year the permit is surrendered or sold. This approach would not bias an entity's decision to bank or use permits. Similarly, it would ensure that there are no adverse tax consequences from using or selling a permit.

Where a permit is purchased and surrendered or sold in the same income year, a deduction would be allowed in that year. If a permit is banked, the effect of the deduction will be deferred until the permit is surrendered or sold. Any proceeds from the sale of a permit would be included in assessable income in the year of sale.

11.2 Preferred position

The cost of acquiring a permit would be deductible at the time the permit is acquired.

If the permit is banked, the effect of the deduction would be deferred until the time the permit is surrendered or sold.

Any proceeds received on the sale of a permit would be treated as assessable income.

A method for achieving the Government's preferred position is described in the following section.

11.5.1 Rolling balance method

One way to ensure that permits are brought to account for income tax purposes at the point of use is for all permits in the scheme to be taxed under a rolling balance method.

Under the rolling balance method:

- the cost of a permit would be deductible when the permit is acquired
- the proceeds from selling a permit would be assessable
- any difference in the value of permits held at the beginning of an income year and at the end of that year would be reflected in taxable income, with
  - any increase in value included as assessable income
  - any decrease in value allowed as a deduction.

The rolling balance would use principles similar to those used in the trading stock regime.

The effect of the rolling balance would be that any expenditure on permits would only affect taxable income in the year in which the permit is surrendered or sold. Therefore, if a permit was purchased and surrendered in the same income year, the cost of the permit would affect the taxable income in that year. However, if a permit acquired in an income year was banked, the cost of the permit would not affect the taxable income in that year.

The use of opening and closing values recognises that multiple transactions affecting the rolling balance can occur in an income year. The closing value of the rolling balance at the end of one year would be used as the opening value for the next year.

For example, since the value of a permit on hand at the end of the income year would be included in the taxpayer's rolling balance, the net effect for tax purposes would be to defer the benefit of the deduction for the cost of purchasing a permit until the permit is surrendered or sold.

Following the surrender of a permit, the rolling balance would be lower than it would otherwise have been if the permit had not been surrendered. In effect, this process gives the taxpayer a deduction for using the permit.

Similarly, after a permit is sold the value of the rolling balance will be lower than it otherwise would have been. At the same time, any amount received for selling the permit would be treated as assessable income. The net result is that the taxpayer is assessed on any increase in the value of the rolling balance or allowed a deduction for any decrease.

11.3 Preferred position

The effect of deferring a deduction for the purchase of a permit would be achieved through a rolling balance method, under which the value of permits held at the beginning and end of the income year would be taken into account.

The value attributed to permits held in the rolling balance is important in determining taxable income. The following section outlines two options for valuing the rolling balance and provides examples of how valuations would work under each option.

11.5.2 Options for calculating values of permits held in the rolling balance

Two methods that could be used to determine the values of permits under the rolling balance method are historical cost and market value.

Historical cost method

Under the historical cost method, the value of a permit would be equal to the permit's original cost of acquisition. This method does not adjust for movements in the market value of the permit during the period in which the permit is held. As a consequence, if the taxpayer does not sell or surrender a permit in a particular income year there will effectively be no income tax consequences for that permit in that income year.

If the taxpayer sells or surrenders a permit in an income year, the cost of the permit is effectively allowed as a deduction. This is because it is taken into account in determining the amount of any increase or decrease in the rolling balance during the income year.

If the taxpayer acquires and banks a permit in an income year, the cost of acquiring that permit would have the effect of increasing the value of the rolling balance. If the taxpayer later sells or surrenders the permit, the effect would be to reduce the value of the rolling balance. If the taxpayer banks a permit in an income year, the cost of acquiring that permit would also be taken into account in determining the amount of any increase or decrease in the rolling balance for that income year.

Box 11.1
Operation of the rolling balance using the historical cost method

This example illustrates the operation of the rolling balance using the historical cost method to value permits held and shows how the taxpayer's taxable income or tax loss for the relevant years of income would be calculated.

Facts

ABC Company purchases 10 permits for $10 each during the 2010–11 income year, all with a 2010–11 vintage. Although the permits are available for use in that income year, no permits are sold or surrendered during the year.

The company surrenders five permits during the 2011–12 income year. The value of the permits at the end of the income year is $11.

The company sells its remaining five permits in the 2012–13 income year for $12 each.

ABC Company does not have any other assessable income or deductions in the income years referred to.

Table 1 demonstrates that, when the value of closing balance exceeds the value of opening balance, the amount of the excess is assessable income. Conversely, where the value of the opening balance exceeds the value of the closing balance, the amount of the excess is deductible.

Table 2 demonstrates the calculation of assessable income, deductions and taxable income due to the purchase, sale and surrender of permits; that is, the taxable income includes the change in the rolling balance as well as the effect of the purchase and sale of permits.

Table 1: Calculation of assessable income and deductions from the rolling balance

	2010–11	2011–12	2012–13
Rolling Balance			
Opening value	0	100	50
Closing value	100	50	0
Change in value	100	(50)	(50)
Assessable income resulting from rolling balance	100	0	0
Deduction resulting from rolling balance	0	50	50

Box 11.1
Operation of the rolling balance using the historical cost method (continued)

Table 2: Calculation of taxable income / tax loss

	2010–11	2011–12	2012–13
Assessable income			
Sale of permits	0	0	60
Increase in rolling balance	100	0	0
Total assessable income	100	0	60
Deductions			
Purchase of permits	100	0	0
Decrease in rolling balance	0	50	50
Total deductions	100	0	50
Taxable income / (tax loss)	0	(50)	10

Explanation

ABC Company has no taxable income or tax loss in 2010–11. Although it receives a deduction of $100 for the cost of acquiring the permits, the value of the permits is also included in the closing value of the rolling balance, resulting in $100 being included in assessable income.

The company has a tax loss of the $50 deduction in 2011–12. The loss results from the decrease in the rolling balance caused by the surrender of the five permits in 2011–12. Note that, as the historical cost method of valuing the permits is used, no allowance is made in the rolling balance for the fact that the actual value of the permits is $11 at the end of the 2011–12 income year.

ABC Company has $10 taxable income for 2012–13. This results from a combination of the $60 assessable income from proceeds from the sale of the permits, and the $50 deduction from the decrease in the rolling balance.

If the historical cost method were used for valuing the rolling balance, the taxpayer would be required to record only two pieces of information: the cost of the permit, and the proceeds from its sale. There would be no tax reason for permits to be revalued. However, this system may require the taxpayer to keep a record of the cost of each permit until it is surrendered or sold. Such a period might be considerably longer than the period over which records are normally kept for tax purposes.

The historical cost method also avoids the taxing of unrealised gains, because a gain or loss would only be recognised when it is realised. A gain could be realised when the permit is sold, while a loss could be realised when the permit is sold or surrendered.

Market value method

Under the market value method, the closing value of a permit would be equal to the market value of the permit at the end of the income year. This method provides for the rolling balance to be adjusted every year to take account of any change in the market value of permits. In other words, if the taxpayer does not acquire, sell or surrender permits in a particular income year, any increase in the market value of permits held at the start of the year would be included in the taxpayer's assessable income. Similarly, any fall in the value of permits would be a deduction.

If the taxpayer sells or surrenders a permit in an income year, the value of the permit is not taken into account in calculating the closing value of the rolling balance, so the closing balance will be lower than it otherwise would have been if the permit had not been sold or surrendered. This effectively gives the taxpayer a deduction equal to the cost of the permit or its opening value for the year. The proceeds from the sale of the permit would also be included in the entity's assessable income.

Box 11.2

Operation of the rolling balance using the market value method

This example illustrates the operation of the rolling balance using the market value method to value permits held and shows how the taxpayer's taxable income or tax loss for the relevant years of income are calculated.

The same facts apply here as applied in the historical cost example in Box 11.1.

Table 3 demonstrates that, when the value of the closing balance exceeds the value of the opening balance, the amount of the excess is assessable income. Conversely, where the value of the opening balance exceeds the value of the closing balance, the amount of the excess is deductible.

Table 4 demonstrates the calculation of assessable income, deductions and taxable income due to the purchase, sale and surrender of permits. That is, the taxable income includes the change in the rolling balance as well as the effect of the purchase and sale of permits.

Table 3: Calculation of assessable income and deductions from the rolling balance

	2010–11	2011–12	2012–13
Rolling Balance			
Opening value	0	100	55
Closing value	100	55	0
Change in value	100	(45)	(55)
Assessable income resulting from rolling balance	100	0	0
Deduction resulting from rolling balance	0	45	55

Box 11.2
Operation of the rolling balance using the market value method (continued)

Table 4: Calculation of taxable income / tax loss

	2010–11	2011–12	2012–13
Assessable income			
Sale of permits	0	0	60
Increase in rollin balance	100	0	0
Total assessable income	100	0	60
Deductions			
Purchase of permits	100	0	0
Decrease in rollin balance	0	45	55
Total deductions	100	0	55
Taxable income / (tax loss)	0	(45)	5

Explanation

As with the historical cost method, ABC Company has zero assessable income or deductions in 2010–11. Although the company receives a deduction of $100 for the cost of acquiring the permits, $100 is included in its assessable income because the permits have a market value at year end of $100, which is included in the rolling balance.

ABC Company has a $45 tax loss in 2011–12, resulting from a deduction for the decrease in the rolling balance. While the company has surrendered five permits in 2011–12, the remaining five permits have increased in market value from $50 to $55.

ABC Company has $5 taxable income in 2012–13, resulting from the combination of the $60 assessable income from proceeds from the sale of the permits, and a $55 deduction for the decrease in the rolling balance.

If the market value method were used to value permits held in the rolling balance, a taxpayer should be indifferent (from a tax perspective) as to whether they sell or retain the permits. This would be the case because any net increase in value of the rolling balance would be included in assessable income (and any net decrease would be allowed as a deduction) whether or not the permits were sold. Also, it is less likely that large amounts would be included in a taxpayer's assessable income upon sale, because the increase in market value of permits in previous income years will have been taxed in those years.

There is the potential for taxpayers to be taxed on unrealised gains under the market value method. For example, this might occur where the value of permits suddenly increases before year end, but goes back to trend levels a few days later. This may result in taxpayers being taxed on gains that they are unlikely ever to realise—although a deduction could be allowed in the subsequent year if prices fall back to trend. The effect of this unrealised gain could be ameliorated by employing averaging techniques for permit-valuation purposes to deal with such fluctuations. Similar averaging techniques are used in other areas of the tax law.

Taxpayers may prefer the market value method depending on their existing business practices. Where accounting standards or practices allow the use of market value for valuing permits, the use of the market value method for the rolling balance would reflect current business practices and therefore would reduce compliance costs. However, some taxpayers may not favour this method as it may bring unrealised gains to account.

Requiring taxpayers to value assets on a market value basis might also impose additional compliance costs. However, as it is proposed that permits will be auctioned regularly (see Chapter 7), and it is expected that a secondary market for permits will develop, market values should be readily available at low cost. If valuation remains a concern, an annual determination could be issued providing taxpayers with the market value of permits at year end.

Possible approaches

The Government does not have a preferred approach for valuing permits for the purposes of the rolling balance, but notes that possible approaches include:

- valuing permits at historical cost
- valuing permits at market value.

11.5.3 Effect on future-dated permits

The Government may issue permits for use in future years (see Chapter 7).

Future-dated permits are like other permits but can be purchased before their vintage year. They can be sold prior to the vintage year but cannot be used to meet an obligation under the scheme until that year.

As is the case for other permits, and to provide tax neutral treatment between current year and future-dated permits, the purchase price of a future-dated permit would be deductible in the year of purchase. However, as for all banked permits, if a future-dated permit is held at the end of the year its value will be included in the rolling balance. When the permit is used or sold, the taxpayer's assessable income or deductions will reflect any increase or decrease in the value of the rolling balance.

11.6 Recognising direct government assistance for liable entities under the income tax system

Two options for providing direct assistance to liable entities to assist them to adjust to the introduction of the scheme are discussed in Chapters 9 and 10. The first option would provide certain liable entities with free permits. The second option would provide cash grants to those liable entities.

A longstanding principle in the income tax system is that the value of benefits obtained, including benefits obtained from a government, whether in the form of money or assets, which are directly related to a business or income-producing activity, should be included in assessable income. The value of the benefit may be treated as either ordinary income or as statutory income. This section examines the appropriateness of the application of this principle to the assistance measures proposed under the scheme.

11.6.1 Free permits

One proposed method to provide assistance to affected industries is to issue free permits. To ensure that the tax system causes minimal distortion to the overarching objective of achieving cost-effective reductions in greenhouse gas emissions, the treatment of free permits and purchased permits must be neutral, regardless of the basis on which free permits are issued.

In addition to applying the principle of tax neutrality to free and purchased permits, the tax system should not differentiate between the taxpayer who chooses to use a free permit and the taxpayer who chooses to sell a free permit. There are three options for the tax treatment of free permits:

- recognise the permit as income to the recipient at the time it is received
- recognise the permit as income to the recipient at the time it becomes available for use in the scheme
- make the permit tax exempt.

Under all of these options, transactions involving free permits would not come within the CGT provisions.

Recognise a free permit as income to the recipient at the time it is received

Under existing tax principles, benefits, whether in the form of money or assets, that are directly related to a business or income-producing activity should be included in assessable income. They should be assessed at the time they are received or otherwise derived.

If this approach were adopted, a methodology for the valuation of free permits could be included in legislation.

However, where a free permit was received and surrendered in the same income year, there could be a specific rule allowing the taxpayer to claim a deduction equal to the amount included in assessable income in respect of that permit. This would result in no

net tax being paid. The tax legislation would be designed to ensure that a taxpayer would not be disadvantaged if the first surrender date following the receipt of free permits falls in the next income year following the year in which the permits were received.

Adopting this approach would ensure consistency between the current taxation approach to industry assistance and the proposed neutral tax treatment of free and purchased permits. It would ensure that, when a free permit is banked, it has the same book value as a purchased permit and therefore would not distort a liable entity's choice to use or sell the free permit. Free permits that are banked would be dealt with under the rolling balance method.

This approach could create cash-flow problems for recipients if they were allocated a large number of permits at one time and were not able to surrender them to the regulator, because, for example, the permits are of a future vintage. However, as the permits will be tradable and there is likely to be a secondary market, an entity could ameliorate any cash flow issues by selling permits on that market.

If the free permits are sold, the sale proceeds would be treated as income and would be assessable in the year of sale, just like the sale proceeds of purchased permits.

Free permits in the rolling balance

Where a free permit is banked, that permit will be included in the rolling balance along with any other banked permits.

Box 11.3
Recognising a free permit as income at the time of receipt

The Government allocates a taxpayer 1,000 free permits in the 2011–12 income year. Each of the permits has a value of $10.

If the taxpayer surrenders all of the free permits to meet its emissions obligation in respect of that year, there would be no net effect on the taxpayer's taxable income in an income year from the issue and surrender of the permits.

- However, if the taxpayer did not surrender the permits in that year but banked the permits until the 2014–15 income year:

- in the 2011–12 income year, the net effect for the taxpayer of receiving the free permits would be that an amount of $10,000 would be included in its assessable income
- in the 2014–15 income year (assuming the taxpayer uses the historical cost method of valuing permits held in the rolling balance) the net effect for the taxpayer of surrendering the free permits would be that the cost of $10,000 would be taken into account in calculating the taxpayer's taxable income.

Recognise a free permit as income at the time it is available for use

An alternative option would be to include the value of the permit in assessable income in the first year it is available for use and at the value of the permit in that year. For all permits, except for future-dated permits, the tax outcomes would be the same as would be the case in the previous option. At the time the permit is surrendered to the Government, the taxpayer would be able to claim a deduction. Where a free permit is received and surrendered in the same income year it becomes available for use, the taxpayer would be able to claim a deduction equal to the amount included in assessable income. Again, this will result in no net tax being paid. Assessing the taxpayer on free allocations at the time they become available for use would, however, overcome the cash-flow problems associated with future-dated permits under the previous option because the year of assessment would align with the year in which they could be used. However, free permits that are banked might still create cash flow issues for liable entities.

If the permit is sold (regardless of whether it is available for use), the sale proceeds would be treated as income and would be assessable in the year of sale. If the sale occurs in the first year in which the permit is available for use, then only the sale proceeds will be included in assessable income. No deduction will be available.

Box 11.4
Free permits available for use in later years

The Government allocates a taxpayer 1,000 free permits in 2010, for use in 2020. The allocation will only be assessable in the year the permits first become available for use and at the market value at the time at which the permits become available for use.

In 2020 the market price of the permits is $20. The taxpayer will therefore be assessed on that allocation at a value of $20,000. If the permits are used in that year, the taxpayer will also be entitled to a deduction of $20,000. However, if the permits are banked and used in later years, a deduction will not be available until the year in which the permits are used.

This option is not preferred as it is inconsistent with tax principles for government assistance and would give rise to a tax expenditure.

The value of the deduction available once a permit is banked is discussed in Section 11.5.1. Future-dated free permits are also treated under the rolling balance method.

Exempt free permits from the tax system

An alternative approach is to exempt the issue of free permits from the tax system. Although this approach would be administratively simple, it could create some unnecessary distortions. Advocates of this approach argue that the free permits are designed to compensate the taxpayer for the loss in value of capital assets or for the increased costs they cannot pass through to consumers, and that taxing permits would undermine the objective of the free issue. However, this argument ignores the points that

there may be multiple reasons for allocating free permits and that anomalies are likely where one source of funds is excluded from the tax net.

The sale proceeds from a free permit would be assessable income as the taxpayer would receive a direct financial gain. Over time, the price of permits (both free and purchased) is expected to rise. If a permit remained banked, its value would continue to rise while its book value remained at zero. Not taxing the permit would create an incentive to hold the permit when there are other taxpayers who may value the permit more highly. This would mean that the tax treatment of a permit would undermine the environmental effectiveness of the scheme.

Furthermore, if a free permit were exempt from the tax system, the use of the permit would not be recognised. No deduction would be available for using the permit. Also if a liable entity were able to choose between using a purchased permit it had banked and a free permit it had banked, it may choose the purchased permit because of the deduction it could claim for that permit's use.

11.4 Preferred position

The value of free permits would be included in the taxpayer's assessable income in the year the permits are received.

11.6.2 Cash grants

An alternative form of assistance is to provide cash grants to taxpayers. This approach could achieve the same result as the provision of free permits and could be applied to the same taxpayers.

The tax treatment of grants does not appear to generate distortions in the scheme. The grant could be used to purchase permits which would then be subject to the same taxation as all other purchased permits. However, as previously stated, there is a long-standing principle in the income tax law that benefits, whether in the form of money or assets, which are directly related to a business or income-producing activity should be included in assessable income. Therefore, the preferred approach would be to recognise the grant as assessable income.

11.5 Preferred position

The value of a cash grant given to a liable entity as assistance under the scheme would be included in their assessable income in the income year it is received.

11.7 Income tax treatment of penalties for non-compliance

The income tax law does not allow a deduction for the payment of a penalty imposed under an Australian law. Consequently, a penalty imposed under the Carbon Pollution Reduction Scheme legislation, including one imposed on a liable party for failing to surrender sufficient eligible compliance permits, will not be deductible. The imposition of penalties under the scheme is discussed in Chapters 3 and 5.

11.8 Goods and services tax

This section outlines the preferred approach for the GST treatment of transactions under the scheme. It is expected that all entities required to be covered by the scheme, as well as the Government entity issuing the permits, would be registered for GST purposes.[1]

11.8.1 Preferred GST treatment of scheme transactions

The preferred approach would be to treat scheme transactions under the normal GST rules. Such treatment would be consistent with the tax objectives for permits as outlined in Section 11.1.

The application of the normal GST rules would also be consistent with the underlying principles of the GST (including its broad based-nature) and minimise the incidence of entities being unable to offset any GST paid on business inputs (embedded tax).

Generally, transactions involving supplies of permits that are made for consideration (that is purchased permits) would be subject to GST, while no GST liabilities would arise on supplies of permits for which there is no consideration (that is, freely allocated permits).

This would provide neutral treatment between different types of permits as entities would generally be able to claim an input tax credit equal to any GST included in the price of permits. The application of the normal rules would also avoid complexity in the law, and minimise both compliance costs for taxpayers and administrative costs for the Government.

11.8.2 The GST treatment for different types of scheme transactions

Under the normal GST rules, a supply[2] is a taxable supply if:

- the supplier is registered or required to be registered for GST
- the supply is made in the course or furtherance of an enterprise carried on by the supplier
- the supply is made for consideration
- the supply is connected with Australia
- there is no specific provision within the GST law to make the supply GST-free or input taxed.

The GST treatment of different types of scheme transactions under the normal rules is outlined below.

Auctioned permits

Permits that are auctioned would be treated as taxable supplies consistent with the treatment of supplies of most other goods and services that are made for consideration.

This treatment would ensure tax-neutrality between purchasing permits and purchasing assets that can reduce emissions (for example, purchasing more energy-efficient assets), as supplies of those assets would generally be treated as taxable supplies.

Free permits

No GST would apply to supplies of free permits, because supplies made for no consideration are not taxable supplies.

Unconditional government assistance, including a cash grant

GST would not apply to Australian Government assistance when the assistance is not consideration for a supply by the recipient. This includes unconditional cash grants to entities in affected industries.[3]

Surrendered permits

As with allocating free permits and providing unconditional government assistance, GST would not be payable for surrendering a permit. This assumes that a permit is not surrendered for consideration.[4]

Payment of a penalty for non-compliance

A penalty imposed on emitting above the level represented by surrendered permits would not be subject to GST. This would be consistent with the GST treatment of other penalties.

Imports of eligible compliance permits

GST would not normally[5] be payable on imports of permits (that is, permits created or generated overseas). This is because a supply connected with real property outside of Australia or the supply of anything other than goods or real property that is performed outside of Australia is not a supply connected with Australia and therefore is not considered a taxable supply. This treatment would be consistent with the current treatment of the import from overseas of things other than goods or real property.

11.6 Preferred position

Scheme transactions would be treated under the normal GST rules. This would ensure that scheme transactions would receive the same treatment as similar transactions in the broader economy. It would also be consistent with the underlying principles of the GST, including its broad-based nature, minimise compliance costs for entities and avoid complexity in the law.

The treatment of permits under the normal rules would generally not lead to embedded GST for registered entities and, from a GST perspective, those entities would be indifferent as to whether permits were auctioned or free. [6]

11.9 Accounting for emissions-related assets and liabilities

Accounting standards perform a fundamental role in ensuring the provision of accurate and comparable information about the financial performance and position of companies and other reporting entities. This is necessary to allow investors to make decisions about the allocation of resources. In addition, accounting standards assist those who prepare financial statements by providing them with a framework within which they can report financial information about the company.

As the adoption of a scheme represents a major economic reform to the Australian economy, it is important to ensure that appropriate accounting standards are in place so that comparable and reliable information is provided to investors regarding the financial implications of the scheme and also to provide certainty to companies when they are preparing their financial statements. Consistent with Australia's decision to adopt International Financial Reporting Standards (IFRS), the accounting requirements for emissions-related assets and liabilities in Australia will be determined by the requirements of IFRS as developed by the International Accounting Standards Board (IASB) and issued by the Australian Accounting Standards Board (AASB).

11.9.1 Existing accounting requirements

A permit held by a company or other reporting entity would be treated as an asset of the entity, while a requirement to surrender a permit may be treated as a liability. IFRS currently do not contain explicit accounting requirements in relation to emissions-related assets and liabilities. However, the appropriate accounting treatment under IFRS was considered by the International Financial Reporting Interpretations Committee (IFRIC) in 2002 following the announcement that the European Union would be establishing an emissions trading scheme.[7] IFRIC subsequently issued an interpretation on the appropriate accounting treatment for these items in December 2004.

The accounting treatment specified in the IFRIC interpretation was not widely supported by companies. In particular, companies expressed concerns about the different accounting treatments applied to changes in the values of emissions-related assets as opposed to emissions-related liabilities. Inconsistent accounting treatments for emissions-related assets and emissions-related liabilities were considered to be an inappropriate accounting outcome and, as a result, IFRIC withdrew the interpretation in June 2005. At that stage, IFRIC referred the matter to the IASB for its consideration, with a view to amending IFRS to allow for the consistent treatment of emissions-related assets and liabilities. To date, the IASB has not made any amendments in this area (see Section 11.9.2).

In the absence of explicit requirements, European Union companies are required to account for emissions-related assets and liabilities in accordance with the general principles contained in IFRS. This has resulted in a diverse range of accounting

treatments being adopted by European Union companies. There are two main areas of diversity.

- *Free permits*. Under the European Union scheme, a large number of permits are allocated to companies for free.[8] When a company is allocated a free permit, it is receiving an asset from the government. There is divergence in relation to the measurement of this asset. In particular, some companies are reporting the asset at its market value at the date when the permit was granted, while other companies are reporting the asset at what it cost to acquire (that is, zero). If a company reports the asset at its market value, it is also reporting an increase in revenue equal to the value of the permits.
- *Obligation to acquit*. Under the European Union scheme, companies are obligated to acquit permits equal to their emissions for the period.[9] This obligation is a liability. There is divergence in relation to the measurement of the liability. In particular, some companies are reporting the liability at the cost of the permits that must be acquitted (if the permits were allocated for free, the liability is reported at zero) while other companies are reporting the asset at the current market value of the permits that must be acquitted.

The particular treatment adopted in relation to these issues has the potential to materially affect the level of assets and liabilities as well as profit reported by a company. In the absence of explicit accounting requirements, Australian companies would be required to report emissions-related assets and liabilities in accordance with the general principles in IFRS, taking into account the specific characteristics of the Australian scheme.

11.9.2 IASB project and the way forward

The Australian Government has written to the IASB indicating that it would be desirable for IFRS to be amended to facilitate appropriate reporting of emissions-related assets and liabilities prior to the commencement of the scheme. As noted above, this would provide certainty for Australian businesses as to the financial reporting implications of the scheme. Investors in Australian companies would also be better informed if companies reported this information in a consistent and comparable manner. Given that a number of countries have either established an emissions trading scheme or are developing a scheme, the Australian Government strongly supports an international response (developed by the IASB) to this issue, rather than an Australian-specific response (developed by the AASB). This would ensure globally consistent accounting policies in this area.

The IASB has indicated that it is actively considering this issue and has placed it on its forward work agenda. The Australian Government will continue to liaise with the IASB on this issue, with a view to promoting the development of appropriate accounting requirements prior to the commencement of the scheme. The IASB has indicated that it expects to issue an exposure draft in relation to this project during the second half of 2009 and a final standard in 2010. The IASB will engage in public consultation in developing any amendments in this area. Depending on the status of the IASB project

closer to the commencement of the Australian scheme, consideration may also be given to issuing interim Australian-specific accounting requirements in relation to the reporting of emissions-related assets and liabilities. If this approach were taken, the AASB would be responsible for issuing those requirements and would consult stakeholders on this issue.

Endnotes

1 Entities are required to be registered for GST if the annual turnover of their enterprise is $75,000 or more (or $150,000 or more for non-profit bodies). Entities can also voluntarily register for GST purposes, provided that they are engaged in an 'enterprise'. Government agencies are considered to be engaged in an enterprise for GST purposes and, in general, are registered for GST.

2 The term 'supply' is very broad and includes not only a supply of goods and services but also the creation, grant, transfer, assignment and surrender of rights, as well as the entry into, or release from, certain obligations. Effectively, any transaction to which a GST-registered entity is a party can have GST consequences.

3 Under the normal rules, GST may be payable on any conditional Government assistance provided. This may occur if the assistance is regarded as consideration for a supply made by the entity to the Government. It is not clear at this stage if GST would apply to any conditional assistance provided with the introduction of the scheme.

4 This is based on two assumptions: first, that surrendering permits does not give rise to reciprocal obligations which may be consideration for the supply (that is, for the surrender of the permit); second, that the entity to which a permit is surrendered would not charge any fee for its service (for example, a fee for cancelling the permit or verifying that declared emissions are within the levels determined by permits).

5 Special GST rules exist for some suppliers not connected with Australia but used to produce input-taxed supplies.

6 This is because, in general, neither taxable nor non-taxable treatment of transactions involving permits would impose any net GST burden on registered entities (as any GST included in the price of inputs can be claimed by such entities as a credit).

7 IFRIC has responsibility for clarifying the application of IFRS in relation to particular issues. IFRIC has no capacity to amend IFRS. This can only be done by the IASB.

8 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

9 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

12. Transitional issues

This chapter addresses transitional issues associated with the introduction of the Carbon Pollution Reduction Scheme.

As noted in Chapter 1, the Carbon Pollution Reduction Scheme will be a major economic reform that will have widespread economic consequences. A number of issues need to be considered in the lead up to, and following, the introduction of the scheme to ensure a smooth transition.

This chapter examines specific issues associated with the transition to the Australian Carbon Pollution Reduction Scheme.

- Section 12.1 discusses the proposed Climate Change Action Fund designed to assist business transition to a cleaner economy.
- Section 12.2 discusses the possible transition of two existing state-based schemes operating in the electricity market.
- Section 12.3 discusses whether specific measures are needed to provide credit for early action.
- Section 12.4 discusses whether specific measures are needed to address the impacts of the scheme on commercial contractual arrangements and existing pricing regulations.

12.1 Climate Change Action Fund

The challenge of adjusting to a lower emissions environment will be broadly shared across the economy. The Government is providing significant support to emissions-intensive, trade-exposed (EITE) industries through free permit allocations covering a significant proportion of their direct and indirect emissions.

12.1 Preferred position

To assist business more generally, the Government proposes to establish the Climate Change Action Fund. This Fund will focus predominantly on those industries not receiving free permit allocation, but which nevertheless need assistance to adjust to the carbon price.

Support under the fund will be provided in two distinct components:

- firm-specific support (including through various one-off grants or broader industry-wide measures)
- support directed to particular workers and communities.

Assessment criteria will be developed that require clear, identifiable and significant impacts as a result of the scheme during the transition, which could be cost-effectively addressed by additional government support, including through partnership funding for a range of activities including:

- capital investment in innovative new low emissions processes
- industrial energy efficiency projects with long payback periods
- dissemination of best and innovative practice among small to medium sized enterprises.

The Government proposes to settle funding arrangements for the fund in the context of final design decisions for the Carbon Pollution Reduction Scheme.

The Government will take into account the outcomes of the Strategic Review of Australian Government Climate Change Programs ('the Wilkins Review') and the COAG assessment of complementary measures in setting the final design for the Fund.

The regional impacts of adjustment may be concentrated. While structural adjustment measures already in existence provide a means to assist affected workers and regions, additional support may be required in some instances. In relation to specific support (outside the electricity sector, which is separately provided for), transitional adjustment assistance may be provided on an 'as needed' basis to particular workers and communities.

Such assistance will be designed to:

- take into account the existence of generally applied measures that assist structural adjustment in all sectors (such as social security and employment policies)
- be provided where a clear and sizable burden has been, or is highly likely to be, imposed on an identifiable segment of the community
- be designed to assist the adjustment of workers and regions to their new circumstances, rather than to prevent or hinder that adjustment
- apply, as necessary, regardless of whether particular firms in an affected industry have received support.

12.2 Transition of existing measures

At the state level, two major (non-renewable based) market-based measures are operating in the electricity market. The rationale for those measures is diminished with the introduction of a national Carbon Pollution Reduction Scheme.

The first market-based measure is the New South Wales Greenhouse Gas Reduction Scheme (GGAS)[1], which began on 1 January 2003 and was originally scheduled to operate until 2012. In November 2005, the New South Wales Premier confirmed his Government's commitment to extend GGAS to 2020 and beyond. The aim of GGAS is to reduce greenhouse gas emissions associated with the production and use of electricity in New South Wales from 8.65 tonnes of CO_2-e (carbon dioxide equivalent) per capita in 2003 to 7.27 tonnes of CO_2-e per capita by 2007, and to maintain that level until 2020.

In contrast to the proposed Carbon Pollution Reduction Scheme, GGAS is a baseline and credit scheme. It requires individual electricity retailers and certain other parties who buy or sell electricity in New South Wales to meet mandatory benchmarks based on the size of their share of the electricity market. Each abatement certificate represents one tonne of CO_2-e that has been abated; that is, a reduction in emissions, measured against a baseline. The Australian Capital Territory has a counterpart scheme[2], which mirrors GGAS.

Liabilities under GGAS are met through the surrender of New South Wales Greenhouse Gas Abatement Certificates (NGACs), which represent an imputed one tonne of CO_2-e of 'avoided' greenhouse gas emissions. The following four rules define how NGACs are created:

- The generation rule, which allows a generator to create NGACs where it generates electricity at a lower emissions intensity (for example, through the use of renewable or gas-fired generation) than the New South Wales pool average. The rule also rewards coal-fired generators that reduce their emissions intensity, measured against prior performance (that is, a baseline).
- The demand side abatement (DSA) rule, which rewards projects for more efficient use of electricity (for example, when they install compact fluorescent light bulbs) or replace electricity with gas, where this will result in lower greenhouse gas emissions.
- The carbon sequestration rule (relating to forestry), which credits the estimated net increase in carbon stored in eligible forests.
- The large user abatement certificates (LUACs) rule, which covers abatement activity by large electricity users that is not directly related to electricity production or consumption, such as reductions in industrial process emissions or energy-efficiency measures that improve the efficiency of gas use.[3]

The second market-based scheme is the Queensland Gas Scheme[4], which commenced on 1 January 2005 and is scheduled to operate for 15 years. Under this scheme, Queensland electricity retailers and other liable parties are required to source at least 13 per cent of their electricity from gas-fired generation. The Queensland Government subsequently revised the 13 per cent target to 15 per cent. Gas-fired generators in Queensland are able to create certificates for every megawatt-hour of electricity that they produce.

The Queensland Gas Scheme aims to diversify the state's energy mix, encouraging greater use of gas and the development of new gas sources and infrastructure in Queensland. An associated benefit is the reduction of greenhouse gas emissions from the Queensland electricity sector.[5]

12.2.1 Transition commitments by state and territory governments

The New South Wales Government has previously concluded that GGAS and a national cap and trade emissions trading scheme should not operate in parallel. In November 2006, the New South Wales *Electricity Supply Act 1995* was amended to enable GGAS to be terminated if New South Wales participates in an emissions trading scheme that will achieve greenhouse outcomes at least as stringent as those of GGAS. The New South Wales Government also released a consultation paper, *Transitional Arrangements for the NSW Greenhouse Gas Reduction Scheme* (the GGAS Consultation Paper), in April 2008. The paper canvassed transitional issues for each rule and for NGACs that were unused at the end of the scheme.

In contrast to GGAS, the Queensland Government has made no decision to halt the Queensland Gas Scheme upon the introduction of an emissions trading scheme. By its nature, the Queensland Gas Scheme is more akin to a renewable energy target than to an emissions trading scheme like GGAS. While the Queensland Gas Scheme is not necessarily incompatible with a national cap and trade scheme, both schemes are likely to promote the use of gas. Therefore, its interaction with the Carbon Pollution Reduction Scheme needs careful consideration to avoid the imposition of unnecessary cost on the economy.[6]

12.2.2 Likely effects of the transition

The Australian Government understands that the New South Wales, Queensland and Australian Capital Territory governments are considering transitional arrangements for their schemes. As part of this assessment, they are considering whether the transition will adversely affect parties that have undertaken projects under GGAS[7] or the Queensland Gas Scheme.

For a project to be made worse off following the introduction of the Carbon Pollution Reduction Scheme and termination of GGAS or the Queensland Gas Scheme, the financial returns to the project would have to be reduced compared with the returns if the state schemes had continued in the absence of the national scheme. Further, until it was extended to 2020, projects established under GGAS were only guaranteed a scheme life until 2012 and the assessment of project impacts should also take this into consideration.

For most projects undertaken under either GGAS or the Queensland Gas Scheme, adverse impacts appear unlikely. If the carbon price under the national scheme is higher than that under GGAS or it creates a greater advantage for gas-fired generation than the Queensland Gas Scheme[8], the financial returns for many projects will be improved. For example, the Carbon Pollution Reduction Scheme will reward generation from relatively low emissions sources.

The cessation of state-based schemes is a matter for the jurisdictions concerned. However, in the interests of economic efficiency, and to streamline the number of schemes in operation in Australia, the Australian Government will discuss transitioning out of those schemes with the relevant jurisdiction. In doing so, it will be mindful that, while most participants in the state and territory schemes are likely to gain an advantage under the Carbon Pollution Reduction Scheme, there may be a small number of exceptional cases which require special treatment. Those cases will also be discussed with the relevant jurisdictions.

12.2 Preferred position

State and territory governments are encouraged to discontinue their market-based programs once the Carbon Pollution Reduction Scheme commences, as this is consistent with the Council of Australian Governments' complementary measures and streamlining agenda. The Government will continue to work cooperatively with the New South Wales, Australian Capital Territory and Queensland governments to assist them in their development of appropriate transitional arrangements.

12.3 Credit for early action

'Credit for early action' reflects the idea that carbon pollution permits in any future emissions trading scheme could be allocated to companies that reduce their emissions prior to the commencement of the scheme (effectively borrowing from a future emissions cap).

12.3.1 Rationale for early action

A key rationale for early action arrangements is that they encourage additional abatement, which might not otherwise occur under normal business practices, in the period before emissions trading commences.

The Government has not made any commitments on early action credits. The previous Government's Task Group on Emissions Trading[9] proposed that credit for early action be considered. The Task Group's proposal was followed in September 2007 by a discussion paper on incentives for early abatement, which raised the possibility that companies be given early action credits for activities that met minimum standards. That paper proposed that any credits be restricted to activities that commenced after the emergence of bipartisan agreement in support of the introduction of an emissions trading scheme (3 June 2007). The proposal was also made in the context of an emissions trading scheme that would not start prior to 2011 and perhaps later.

While some countries, such as New Zealand[10], adopted forms of early action credits, early action credits were not included in the European Union Emissions Trading Scheme[11], and were not proposed by the National Emissions Trading Taskforce (NETT).[12]

12.3.2 Options for early action

There are two basic options relating to early action credits:

- early action is not recognised in the Carbon Pollution Reduction Scheme
- early action is recognised in the Carbon Pollution Reduction Scheme (for example, as proposed in the September 2007 discussion paper).

The options relate only to abatement between 3 June 2007 and the start of the Carbon Pollution Reduction Scheme. A further option, giving credit for action prior to 3 June 2007, is not considered because it would not achieve the basic objective of promoting additional abatement before the start of the scheme and would be impossible to verify and allocate in a transparent and fair way.

Recognising early action could:

- promote increased abatement of greenhouse gas emissions in the lead-up to the formal commencement of the Carbon Pollution Reduction Scheme
- assist companies to reduce their future obligations under the scheme and build their capacity to manage emissions and future carbon price risks
- assist Australia to meet its 2008–12 Kyoto Protocol to the United Nations Framework Convention on Climate Change (Kyoto Protocol) target by reducing emissions in years

that will not be covered by the Carbon Pollution Reduction Scheme (2008, 2009 and part of 2010)

- provide opportunity for the Government and the public to acknowledge abatement action taken by early movers.

However, the design and implementation of early crediting arrangements would require considerable resources on the part of both business and government. Schemes that measure abatement (rather than emissions) rely on project-based accounting, which involves estimating reductions from a business-as-usual baseline; that is, estimating 'what might have happened' if the project had not gone ahead.

The Government's Greenhouse Friendly initiative currently allows proponents of abatement projects to develop and propose individual measurement methodologies. Accredited verifiers then assess those methodologies for rigour. To accelerate the development and approval of projects and reduce expenses for proponents, standard methodologies covering a diverse range of project types would need to be developed. Only a small number of standard methodologies currently exist under Greenhouse Friendly.[13]

A major program of work to develop consistent methodologies would be required for early action crediting to be implemented consistently and equitably. The benefits of early action crediting would have to be weighed against the investment required to develop such methodologies and the limited time in which the methodologies would be used (they would have no ongoing role in the administration of the emissions trading scheme once sectors were covered). All projects would need to be approved around the end of 2008 or beginning of 2009 to allow sufficient time for project start-up and a minimum crediting period of at least 12 months.

Demonstrating the 'additionality' of early action projects—that a given project would not proceed without early action credits—would also be challenging, given that many businesses will already be taking action to reduce their emissions in anticipation of the commencement of the Carbon Pollution Reduction Scheme. Assessing additionality could be very intrusive for businesses and would be subjective and prone to errors (resulting in the overestimation or underestimation of additionality). Further work would be needed to explore ways of reducing the complexity of assessments and the amount of evidence required of project proponents.

With only two years before trading commences, and early action arrangements yet to be designed or introduced, the scope for delivering additional abatement through early action crediting is limited:

- It would take some time to develop an administrative system for approving early action project proposals, even if this were based on an existing program, such as the Greenhouse Friendly initiative.[14]
- Experience with previous grants programs, such as the Greenhouse Gas Abatement Program, has shown that planning, development and environmental approvals, financing, and construction and commissioning of plant take several years. It is therefore highly unlikely that major projects with large-scale abatement benefits could be executed in time to produce emissions reductions in 2008, 2009 and part of 2010.

Uncertainty about the likely cost of carbon—a key consideration in business decisions about whether to proceed with abatement projects—is also likely to delay or inhibit the submission of abatement project proposals.

The main potential for abatement is from projects that are already well advanced and small projects that do not require substantial capital investment, which are unlikely to achieve significant abatement anyway.

In general, businesses are likely to seek to reduce emissions in preparation for the commencement of trading. A key advantage of a cap and trade scheme is that it implicitly rewards early action by reducing the number of permits that a business will be required to surrender to government (or the associated carbon cost passed on by another entity). In the current policy environment, with the knowledge that the scheme will commence in 2010, businesses are in the best position to determine whether and when to invest in emissions abatement.

Given the substantial work involved in establishing early action arrangements, there is a risk that resources could be diverted from core scheme design and implementation tasks. Early action arrangements would increase administrative complexity and raise implementation risks for business and the Government at a time when preparing for the Carbon Pollution Reduction Scheme is a critical challenge.

The Government therefore considers that the establishment of an early action credit regime has a low priority compared to the design of essential components of the Carbon Pollution Reduction Scheme. The Government encourages early action and considers that businesses will be adequately rewarded for early action with the commencement of the Carbon Pollution Reduction Scheme and the incentives it creates to reduce emissions between now and the commencement of the scheme.

12.3 Preferred position

A program for allocating early action credits would not be established.

12.4 The impacts of contracts and regulation on cost pass-through

Further transitional issues relate to contractual or regulatory impediments to the pass-through of carbon costs to customers and consumers. (Another reason why businesses might not be able to pass on all of their carbon costs is that they are constrained by competition with international competitors that do not face similar carbon constraints, or domestic competitors that have a lower emissions profile. Those issues are discussed in Chapters 9 and 10.) A final transitional issue to consider is the prevention of price gouging.

Various stakeholders have indicated that they are parties to long-term fixed price contracts which will not allow them to pass on any costs imposed under the scheme. Some businesses may also be restricted by pricing regulations that inhibit their ability to pass on reasonable carbon costs in a timely fashion.

There are two main effects of constraints on businesses' ability to pass through carbon costs:

- As discussed in Chapter 1, price increases should generally flow to the consumers of goods and services in order to give an effective carbon price signal that helps guide businesses' and consumers' investment and consumption decisions. It could be more difficult and expensive for Australia as a whole to meet any particular emissions target if such price signals are blocked, and prices do not reflect reasonable carbon costs.
- Regulatory or contractual impediments to cost pass-through may increase the impact of the scheme on particular firms or industries.

12.4.1 Regulatory impediments to carbon cost pass through

Ideally, there should be no regulatory impediments to the pass-through of reasonable carbon costs. (The impact of higher consumer prices is discussed in Chapter 8.)

The broader issue of retail price regulation for electricity and gas consumers is currently being addressed through the work of the Ministerial Council on Energy. The Government supports this market reform agenda.

12.4.2 Contractual impediments to carbon cost pass through

Various stakeholders have indicated that they are parties to long-term fixed price contracts that will not allow them to pass on any costs imposed under the scheme.

Stakeholders have advised that many, but not all, contracts include change-of-law provisions that allow parties to revisit contractual arrangements in the event of changes in government requirements.

There are several potential reasons why contracts might not allow carbon costs to be passed through:

- the issue was considered, but not judged to be material

- the issue was considered and judged to be material, but the carbon cost price risk was consciously allocated to the party that was selling goods or services to the other party

or

- the issue was not considered.

It is unclear to what extent these issues will be material to business operations, as parties to significant contracts involving emissions-intensive goods or services are more likely to have considered the impact of changes in government regulations in determining their contractual arrangements.

Furthermore, some contracts will have been agreed on a risk assessment basis (that is, on the basis that there was no need to accommodate a pass-through of a carbon price). This is a legitimate commercial decision to allocate risk in a particular way that should not be undermined by scheme design.

At this stage, it is not obvious that there is a widespread policy problem that the Government should attempt to solve.

The Government seeks stakeholder views on the impacts of the scheme on commercial contractual arrangements.

Endnotes

1 NSW Greenhouse Gas Reduction Scheme (GGAS): http://www.greenhousegas.nsw.gov.au

2 ACT Greenhouse Gas Abatement Scheme: http://www.icrc.act.gov.au/actgreenhousegasabatementscheme

3 NSW Greenhouse Gas Reduction Scheme (GGAS): http://www.greenhousegas.nsw.gov.au

4 Queensland 13% Gas Scheme: http://www.dlme.qld.gov.au/Energy/13percentgas.cfm

5 Queensland 13% Gas Scheme: http://www.dlme.qld.gov.au/Energy/13percentgas.cfm

6 Queensland 13% Gas Scheme: http://www.dlme.qld.gov.au/Energy/13percentgas.cfm

7 NSW Greenhouse Gas Reduction Scheme (GGAS): http://www.greenhousegas.nsw.gov.au

8 Queensland 13% Gas Scheme: http://www.dlme.qld.gov.au/Energy/13percentgas.cfm

9 Prime Ministerial Task Group on Emissions Trading, *Report of the Prime Ministerial Task Group on Emissions Trading*, Commonwealth of Australia, 2007.

10 New Zealand Government, *Framework for a New Zealand Emissions Trading Scheme*, 2007.

11 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.

12 National Emissions Trading Taskforce, *Possible Design for a national greenhouse gas emissions trading scheme: Final framework report on scheme design*, 200

13 Greenhouse Friendly: http://www.greenhouse.gov.au/greenhousefriendly/index.html

14 Greenhouse Friendly: http://www.greenhouse.gov.au/greenhousefriendly/index.html

13. Governance arrangements and implementation

This chapter considers the governance arrangements for the Carbon Pollution Reduction Scheme, including the framework of rules, relationships, systems and processes by which authority can be exercised within the scheme. It also considers how that framework should be reflected in the legislation establishing the scheme. Proposed key steps in the implementation of the scheme are also discussed.

Sound governance and institutional arrangements will be critical to delivering the outcomes expected from the Carbon Pollution Reduction Scheme in an efficient, effective and accountable way. Early and systematic consideration of how the scheme will be implemented will also be a key to achieving desired outcomes. The Government is giving attention to practical aspects of implementation during the design of the scheme, as well as taking early action to ensure that the scheme operates effectively and smoothly from its commencement.

This chapter discusses the following issues:

- Section 13.1 discusses the framework for assigning responsibility for roles that will need to be performed in relation to the operation of the scheme, between the Parliament, the Government (through the responsible minister), and the independent regulator.
- Section 13.2 discusses the assessment of a number of key roles and assignment of responsibility for them in accordance with that framework.
- Section 13.3 outlines a proposal for an independent review process for assessing the scheme's performance and providing advice to the Government on key scheme parameters.
- Section 13.4 discusses the role of the states and territories.
- Section 13.5 outlines the institutional arrangements for the scheme regulator, including provision for its independence and accountability and its relationship with other regulators.
- Section 13.6 discusses key steps in implementation of the scheme.

Governance arrangements for the scheme involve the application of standard and well-established principles of good governance. It follows that there are fewer options to be canvassed in this chapter than in others. Where there are genuine alternatives, or where different models have been put forward in other forums, they are set out and comment is sought.

13.1 Framework for assigning key roles

Governance arrangements require the allocation of responsibility for particular roles that will need to be performed in relation to the operation of the scheme. Key roles are likely to include:

- setting the medium- and long-term national emissions reduction targets
- setting the emissions trajectory (including the scheme caps and gateways) to meet the national targets over time
- deciding which sectors should be covered initially by the scheme, and on what terms
- deciding which additional sectors should be covered as the scheme develops, and on what terms
- setting out principles and criteria for assistance to emissions-intensive, trade-exposed industries and strongly affected industries
- deciding whether particular entities are eligible for such assistance
- deciding general principles for the banking and borrowing of carbon pollution permits
- applying any banking and borrowing principles to individual cases
- allocating permits, including handling auction proceedings
- deciding which methods should be allowed for measuring and reporting emissions
- receiving emissions data and assessing each liable entity's obligation to surrender eligible compliance permits
- monitoring, facilitating and enforcing compliance with the scheme
- operating a registry to track the issuance, holding and transfer of eligible compliance permits
- determining the nature and extent of linking between Australia's Carbon Pollution Reduction Scheme and other schemes operating internationally
- providing education about the scheme
- reviewing the performance of the scheme and the effectiveness of scheme settings.

Responsibility for particular roles may be allocated to: the Parliament, by setting out decisions, or the rules for making decisions, in legislation; the Government, encompassing the cabinet and the minister with primary responsibility for the scheme; a statutory body established to administer the scheme, 'the regulator'; and independent review bodies.

13.1.1 Assessment criteria

There is no single formula for good governance that dictates how best to allocate responsibilities: effective governance arrangements will need to be tailored to the specific objectives, features and operational environment of the scheme. Options for governance arrangements will be assessed against the common assessment criteria set out in Chapter 1 of this green paper. The criteria of accountability and transparency; economic efficiency; policy flexibility and fairness will be particularly significant when considering governance arrangements for the scheme.

Political accountability suggests that elected representatives (the Parliament and the Government) should be given responsibility for major policy decisions which require the balancing of broad environmental, economic and social considerations and which have far-reaching implications. Where the decisions are of particular consequence, or where it is desirable to establish a high degree of certainty, it would be preferable to involve the Parliament by setting the decisions out in legislation. In cases where decisions need to be made at frequent intervals or where flexibility is necessary, it would be preferable to assign the role to the Government, acting through the responsible minister within the framework set out in legislation. The extent to which the Government's decisions should be informed by advice from an independent committee of experts is considered in Section 13.3 of this chapter.

As noted by the Garnaut Climate Change Review in the *Draft Report*[1], the financial implications of some administrative decisions under the scheme mean that the Government may find itself subject to pressure to favour particular entities over others. Any such intervention would be at the expense of the community as a whole and would undermine the credibility of the scheme. Separating policymaking from administration can help reduce this risk. Having set the policy framework, the Government, acting through the responsible minister, should assign the administration of the policy to a separate body, which is given relatively limited and legislatively prescribed discretion. Because the body is more limited in the factors it may consider in making a decision, the risk that those decisions are based on factors outside the scheme's objectives is reduced. Such an arrangement can also contribute to efficient and effective administration because the body is focused on a discrete number of tasks. This analysis suggests that it would be desirable to establish an independent regulator to take responsibility for those roles that involve decisions about individual cases, and those that are essentially administrative.

In the interests of economic efficiency, the governance arrangements should provide as much certainty and predictability for regulated entities and the market as is practicable. However, this will need to be balanced against the provision of sufficient policy flexibility for the Government to adjust the scheme to respond to changed circumstances or to reflect lessons learned in operating the scheme.

13.1 Preferred position

Elected representatives (the Parliament and the Government, acting through the responsible minister) would be given responsibility for policy decisions with significant and far-reaching implications, and an independent regulator would be responsible for decisions that are essentially administrative in nature or that involve individual cases.

The guiding approach to governance arrangements would be to provide as much certainty and predictability for regulated entities and the market as is practicable, while retaining a legitimate degree of flexibility for the Government to adjust the scheme in response to changed circumstances.

13.2 Allocation of responsibility for key roles

This section examines the options for allocating responsibility for some of the most significant roles in the Carbon Pollution Reduction Scheme, including the medium- and long-term national targets and emissions trajectory; the scheme caps and gateways; and assistance to emissions-intensive, trade-exposed industries and industries strongly affected by a carbon price. A more comprehensive allocation of key roles is set out in Table 13.1.

13.2.1 Setting national targets and the trajectory

The Government has committed to a long-term national target of reducing greenhouse gas emissions by 60 per cent of 2000 levels by 2050. The Government has also committed to announcing a firm indication of its national emissions trajectory (the path of emissions through time) by the end of 2008 (see Chapter 4).

The national targets and trajectory cover Australia's total emissions, including sectors covered and not covered by the scheme. The scheme gateways and caps (for covered sectors) will be set in accordance with the broader national targets and trajectory.

The national targets and trajectory and the corresponding scheme caps and gateways will be key drivers of the cost of the scheme and have potentially large implications for the national economy. The accountability criteria therefore suggest that such decisions, involving a judgment about the appropriate level of societal cost, are best made by the elected representatives. This is consistent with the recommendations of the Garnaut Climate Change Review in the *Draft Report* (see Box 13.1).

A clear and firm emissions reduction pathway that is subject to minimal change has clear economic efficiency advantages. Including the national targets in the Act establishing the Carbon Pollution Reduction Scheme would signal that the targets are designed to be durable elements of the scheme and increase market certainty. This suggests that there would be advantages to including a non-binding reference to the Government's medium-term national target range and 2050 national target in the objects clause of the establishing Act. The Government may also use the objects clause to set out the factors to be considered when making decisions on the national targets over time, including the role of evolving international agreements.

Setting out indicators of the national emissions trajectory in the establishing Act would also contribute to market certainty. However, one of the purposes of the national trajectory is to provide a smooth transition towards the long-term national targets. Therefore, it is desirable to maintain some flexibility for the trajectory and the related scheme caps and gateways, to take account of changes in international circumstances, technological advances and economic conditions. In an attempt to balance the competing considerations of market certainty and policy flexibility, Chapter 4 recommends setting the scheme caps five years in advance (extended every year) and setting the gateways 10 years in advance (extended every five years). The incremental nature of the extension process will make it impractical to include the scheme caps and gateways in the establishing Act, as the Act would then require frequent amendment. Therefore, it is proposed that the scheme caps and gateways be set out in delegated legislation. This would provide parliamentary scrutiny while meeting the flexibility

criterion and practicality requirements. To further enhance the accountability and transparency of the cap and gateway setting process, it is suggested that they be subject to periodic, independent, evidence-based review (see Section 13.3, which discusses the role of independent reviews).

Box 13.1
Targets and trajectory: Comparison with the Garnaut Climate Change Review recommendations

Assigning responsibility for setting the national targets and the trajectory to the Parliament and the Government, acting through the responsible minister, is consistent with the recommendations by the Garnaut Climate Change Review in the 'Emissions Trading Discussion Paper', which describes setting the emissions limits as an 'indelible prerogative of political government'.[2]

With regard to the trajectory, the review suggests that the Government announce a set of different possible trajectories at the outset of the scheme. The regulator would then administer the move from one trajectory to another, but only after the Government had certified that the conditions for change had been met. The broad allocation of responsibility by which the Government decides the higher-level policy, which the regulator then administers, is consistent with the Government's preferred position.

However, the Garnaut Review's approach to trajectory setting differs from the Government's preferred position (set out in Chapter 4 of this green paper). The difficulty with the more mechanistic approach proposed by the review is that the international situation is intrinsically uncertain and there is potential for unforeseen outcomes. Any attempt to set the trajectory in advance risks locking Australia into an inappropriate framework. A possible approach is to give the Government more discretion to set the scheme caps and gateways to take account of international circumstances. As noted in Chapter 4, the Government considers that the proposed five years of hard scheme caps, combined with 10 year gateways and the medium- and long-term targets, will provide sufficient guidance to the market on the future trajectory.

To add transparency to the governmental decision-making process, it is suggested that decisions about the medium- and long-term national targets and the scheme caps and gateways be informed by the public advice of an independent expert committee.

13.2 Preferred position

A non-binding reference to the medium- and long-term national targets would be included in the objects clause of the Act establishing the scheme. Factors that the Government may consider when making decisions about the national targets over time could also be set out in the objects clause.

The scheme caps and gateways would be set out in delegated legislation.

13.2.2 Industry assistance

The Government has announced that it will address the impact of the scheme on emissions-intensive, trade-exposed industries and industries strongly affected by a carbon price. The design of measures to address these impacts will require consideration of a wide range of factors including, in the case of emissions-intensive, trade-exposed industries, an assessment of the state of international factors contributing to leakage and Australia's international trade obligations. Furthermore, assistance to particular industries will increase the adjustment burden placed on other sectors of the economy. The nature of these decisions, and their wider implications, suggest that the formulation of principles and criteria to address industry assistance should be the responsibility of the elected representatives. This would include setting out criteria for eligibility, and determining the quantum of assistance and timeframe for assistance.

To increase the accountability and transparency of such policy decisions, it would be useful to set out broad principles for industry assistance in the establishing Act. The Government's preferred position is to base assistance for emissions-intensive, trade-exposed industries on the conduct of particular activities. It is proposed that precise definitions of which activities would be eligible for assistance, details required to calculate the amount of assistance provided to individual entities, and the process by which proponents for non-listed activities could have their cases considered, would be set out in delegated legislation.

The application of industry assistance policy may have significant financial implications for the individual entities involved. The accountability criterion suggests that the responsibility for assessing the eligibility of individual cases should therefore be assigned to the regulator, acting in accordance with the legislatively prescribed principles and criteria. This will promote confidence that decisions are based solely on the relevant legislative criteria.

Box 13.2
Industry assistance: Comparison with the Garnaut Climate Change Review recommendations

The Government's preferred position is broadly in line with the approach set out by the Garnaut Climate Change Review. However, the Review's model of assistance is more complex and would require the regulator to discover data and assess the level of assistance. Such a model would require a very high capability on the part of the regulator and very significant resourcing.

The Government's preferred position on industry assistance (set out in Chapter 9 and 10) adopts a simpler model, whereby criteria and levels of assistance are determined by the Parliament. Under that model, the regulator would still be responsible for assessing entities' eligibility for assistance and the precise amount of assistance for each entity; however, less technical analysis would be required of the regulator.

13.3 Preferred position

The broad principles of industry assistance would be set out in the establishing Act. Further detailed criteria for determining eligibility and the quantum of assistance would be set out in delegated legislation. This would be administered by the regulator, which would have a high level of operational independence in determining individual cases in accordance with the legislatively prescribed criteria.

13.2.3 Monitoring, facilitating and enforcing compliance

Mechanisms for compliance are discussed in Chapter 5. Determining an appropriate framework for monitoring, facilitating and enforcing compliance is a high-level policy decision and should accordingly be set by elected representatives. To provide clear guidance for liable entities, it is suggested that the establishing Act set out a broad compliance framework. The precise compliance and enforcement provisions, including civil and criminal penalties, will be considered when the basic design of the scheme is settled.

The enforcement activity itself involves decisions about individual cases, and there would be benefits to assigning this role to an independent regulator operating in accordance with the legislatively prescribed framework. It is proposed that the Act give the regulator a range of compliance, investigative and enforcement powers, with the flexibility to select from a set of graduated options to respond proportionately to noncompliance.

13.4 Preferred position

The Act establishing the scheme would set out a broad framework for monitoring, facilitating and enforcing compliance. The regulator would then be given responsibility for ensuring compliance by liable entities and, to that end, be given a range of compliance, investigative and enforcement powers, with the flexibility to select from a set of graduated options to respond proportionately to non-compliance.

Table 13.1 Proposed allocation of responsibility for key roles under the Carbon Pollution Reduction Scheme

Decision/role	Proposed responsibility	Proposed form of decision	Rationale
Setting the medium- and long-term national emissions reduction targets	Parliament	A non-binding reference to the 2020 target range and 2050 target would be contained in the objects clause of the establishing Act.	Including the national targets in legislation would indicate that they are intended to be durable elements of the scheme (subject to independent review).
Setting the emissions trajectory (including scheme caps and gateways)	Government, through the responsible minister, with parliamentary oversight	The minister's decisions on the annual caps and gateways would be reflected in delegated legislation.	The scheme caps and gateways will have a potentially far-reaching impact on the scheme settings and the economy. This suggests it is a role best assigned to the Parliament and the Government, in line with the accountability principle.
Determining which sectors should be covered initially and on what terms	Parliament	The sectors to be covered by the scheme would be set out in the establishing Act.	Decisions on which sectors will be covered involves the consideration of a wide range of factors and will have a significant economic impact. They are, therefore, best assigned to elected representatives. Given the significant consequences, it would be desirable to involve the Parliament by setting out the decisions in the establishing Act.
Determining which additional sectors should be covered as the scheme develops and on what terms	Government, through the responsible minister, with parliamentary oversight	Including additional sectors would best be done by amendment of delegated legislation if possible. However, this will not be possible if substantial sector-specific provisions are required and they are of such significance that they should be included in the establishing Act. It would be desirable for the timing and expected criteria for including additional sectors to be set out by the Government at the commencement of the scheme.	In the interest of economic efficiency (in particular, market predictability and certainty), it would be desirable for the Government to set out explicitly the timing for including sectors that are initially not covered, well in advance of their inclusion. However, this must be weighed against the need to maintain flexibility to take account of the development of measurement capacity in different sectors.
Determining the principles and criteria for assistance for emissions-intensive, trade-exposed industries and strongly affected industries	Parliament and the Government, acting through the responsible minister	High-level principles for industry assistance would be set out in the establishing Act. Precise definitions of which activities would be eligible for assistance, details required to calculate the amount of assistance provided to individual entities, and the process by which proponents for non-listed activities could have their cases considered, would be set out in delegated legislation.	The provision of industry assistance will have implications for the distribution of the economic burden of emissions reduction and would therefore be best assigned to elected representatives. Including the principles in the Act will involve the Parliament and increase the transparency of assistance policy. However, as activities eligible for assistance are likely to be subject to change, detailed criteria will be best included in delegated legislation.

Decision/role	Proposed responsibility	Proposed form of decision	Rationale
Deciding whether particular entities are eligible for industry assistance	Regulator	The regulator's decision would be based on the principles and criteria set out in the establishing Act and delegated legislation.	The potentially significant financial implications of these decisions suggest it would be preferable to assign them to an independent regulator, which will be required to make decisions based on principles and criteria set out in legislation.
Deciding general principles for the banking and borrowing of permits	Parliament	General principles governing banking and borrowing would be set out in the establishing Act.	Banking and borrowing will have significant effects on the scheme's trajectory and on whether the medium- and long-term targets will be met. This suggests that banking and borrowing policy should be determined by the Parliament.
Applying banking and borrowing principles to individual cases	Regulator	Note that the proposed policy settings for banking and borrowing (set out in Chapter 4) will preclude a significant role for the regulator.	Applying the banking and borrowing principles set out in the establishing Act is essentially an administrative function and therefore best assigned to the regulator.
Allocating carbon pollution permits, including handling auction proceedings	Regulator, with initial auction design announced by the Government to provide an early indication for the market	The establishing Act would set out a broad auction design framework and assign a wide discretion to the regulator with a power for the responsible minister to give directions.	It would be desirable to give the regulator broad discretion to determine auction design so that it can take account of circumstances and amend the design, which is likely to evolve with experience. To provide the market with an early indication of auction design, the Government would set out an initial framework, which could be amended by the regulator once it is established.
Deciding which methods should be allowed for measuring and reporting emissions	Government, through the responsible minister, with parliamentary oversight	Set out in delegated legislation.	A similar approach exists under the *National Greenhouse and Energy Reporting Act 2007*. Consideration will need to be given to whether additional entities will need to report, to what additional information will be required and to assurance arrangements.
Assessing emissions data to determine each liable entity's obligation to surrender eligible compliance permits	Regulator	The regulator's role would be set out in the establishing Act.	This is an administrative role and best suited to the regulator.
Monitoring, facilitating and enforcing compliance with the scheme	Regulator	The establishing Act would set out a broad compliance framework. The regulator would then be given a range of investigative, compliance and enforcement powers, with the flexibility to select from a number of graduated options to respond to noncompliance.	As enforcement activity requires decisions about individual cases, it would be best assigned to an independent regulator operating within a legislative framework.

Decision/role	Proposed responsibility	Proposed form of decision	Rationale
Maintaining a registry to track the issuance, holding and transfer of eligible compliance permits	Regulator (with the capacity for services to be contracted out as appropriate)	The functions and the key features of the national registry would be set out in the establishing Act. Detailed processes would be set out in delegated legislation.	The registry has both domestic and international facets, and is important for the economic efficiency of the scheme. Its essential role in the scheme and the technical capacity required would make it preferable to assign it to the regulator.
Deciding the nature and extent of linking between Australia's Carbon Pollution Reduction Scheme and other schemes operating internationally	Government, through the responsible minister with parliamentary oversight	The establishing Act would set out broad principles for linking and the use of international units for compliance purposes. Details on linking arrangements would be set out in delegated legislation.	These decisions have significant implications for the scheme and for Australia's international relations, and are therefore best assigned to the elected representatives. The extent and nature of linking could be adjusted through delegated legislation to provide flexibility to take account of the environmental integrity of units, permits or offsets generated in other schemes.
Providing education on the scheme	Government, through the responsible minister and the regulator	This role could be included in the establishing Act.	Different forms of education will be best suited to different bodies. It is not necessary to give the responsible minister explicit power in the legislation to conduct education, but it may be useful to include it explicitly in the list of the regulator's functions.
Reviewing the performance of the scheme and the effectiveness of the scheme settings	Parliament and Government, through the responsible minister. An independent committee would be convened regularly to provide advice to the Government.	An outline of the review process, including a timeline, would be set out in the establishing Act. It would specify the matters that are suitable for review and allow the responsible minister to ask for additional aspects of the scheme to be reviewed.	The review process will be a key part of finalising key design parameters and setting future scheme caps and gateways. Therefore, it would be best assigned to the elected representatives. Setting out the broad framework for reviews in the Act will provide additional transparency. Giving the responsible minister the ability to request review of additional aspects of the scheme will increase flexibility to respond to unforeseen circumstances.

13.3 Independent review

A process of periodic, independent, public reviews would enhance the accountability and transparency of decisions made under the scheme. The process could also improve the environmental integrity and economic efficiency of the scheme by fostering consistency and predictability in decision making. Review advice will be made public and the Government will take the advice into consideration when making decisions about the scheme.

Issues that reviews might usefully consider include:

- extensions to the national targets
- extensions to the scheme caps and gateways
- the effect of and potential for international linking
- borrowing policy
- whether conditions for ongoing industry assistance have been met
- whether additional sectors should be covered (if this is not included in the Act)
- the responsibilities of the regulator and the responsible minister's power of direction
- auction design
- governance arrangements
- the effectiveness of the scheme as a whole
- any other aspect of the scheme and its operation, in response to a request from the responsible minister.

Best practice suggests that regulation be reviewed at a strategic level every five years. In the case of the Carbon Pollution Reduction Scheme, it may be desirable to ensure that the responsible minister also has the power to bring forward a review. In particular, in the early years of the scheme it may be useful to have more frequent 'care and maintenance' reviews to assess the operation of administrative arrangements. To ensure that these reviews do not adversely affect market certainty, it would be preferable to define their scope tightly.

Reviews could be conducted by either a standing committee of independent experts, similar to the United Kingdom's Committee on Climate Change, or by bodies formed on an ad hoc basis. A standing committee would have the advantage of potentially greater independent capacity, but might create practical resourcing problems and uncertainties about the roles of the committee and policy agencies. There would also be a question as to the function of the committee between reviews. Therefore, it seems preferable to constitute a committee every five years for the specific purpose of conducting the review.

13.5 Preferred position

An independent expert committee would be constituted every five years to conduct public strategic reviews of the scheme. The responsible minister would be provided with the power to bring forward a review. More frequent 'care and maintenance' reviews may be necessary in the early years of the scheme to assess the operation of administrative arrangements. To improve market certainty, the scope of those early reviews would be tightly defined.

13.4 States and territories

Enacting the scheme through unitary Commonwealth legislation is desirable to ensure accountability and transparency by establishing a clear delineation of responsibility for decisions, in which the Commonwealth minister is directly answerable to the Commonwealth Parliament for the scheme. The Commonwealth is a participant in international negotiations which will be highly relevant to scheme design and ongoing operation. Commonwealth administration is therefore best placed to align international and domestic policy approaches.

Cooperation and coordination with the states and territories will be important to ensure that the scheme functions smoothly and that climate change policies at all levels of government remain compatible with the scheme. Therefore, it will be important to maintain ongoing intergovernmental consultation, under the Council of Australian Governments, on the operation and evolution of the scheme in the context of a broader, coordinated climate change strategy.

13.6 Preferred position

The scheme would be implemented through unitary Commonwealth legislation. States and territories will be informally engaged as part of ongoing cooperation and coordination on climate change policy through the Council of Australian Governments.

13.5 The regulator

The above discussion suggests that there are benefits to establishing a special-purpose regulatory body to administer the scheme. In particular, the regulator should be assigned roles requiring decisions about individual cases, including:

- determining whether individual entities meet the criteria for industry assistance
- monitoring, facilitating and enforcing compliance with the scheme.

In addition, efficiency considerations suggest that roles which are essentially administrative would also be best performed by the regulator, including:

- deciding the details of the auction procedure
- operating the national registry.

The regulator should be structured in a way that best allows it to perform its functions, summarised in Box 13.3.

Box 13.3
Proposed key functions of the scheme regulator

- Monitor, facilitate and enforce compliance with the scheme
- Determine procedures for the auction of permits, and arrange auctions
- Determine the eligibility of individual entities to receive free permits, and the quantity of permits to be allocated to them
- Assess the emissions obligations of individual liable entities, based on emissions data reported under the National Greenhouse and Energy Reporting System
- Assess any shortfalls in eligible compliance permits surrendered by liable entities
- Maintain a national registry of eligible compliance permits (Kyoto units and Australian carbon pollution permits)
- Open and close registry accounts upon request, and transfer eligible compliance permits, as instructed by account holders
- Conduct education, information and outreach activities relating to the scheme
- Provide information on the national registry and other matters, as required under Australia's Kyoto Protocol obligations
- Publish information related to the scheme (unless protected under the legislation)
- Exchange information with specified agencies, bodies or statutory office holders to enable or assist them to perform their functions.

13.5.1 Independence

Good market governance requires regulatory agencies to be independent from both stakeholders and politics. However, separation from politics does not mean complete autonomy, but rather that the administrative agency has operational independence to implement legislation without intrusion from the Government, while still responding to the policy goals established by the Government.

Within the Commonwealth system the independence of statutory authorities varies considerably. Towards one end of the spectrum, the Reserve Bank of Australia is perceived to have a high level of operational independence to achieve the goals set for it by the Government, through the responsible minister. At the other end, regulators such as the Greenhouse and Energy Data Officer have heavily prescribed roles. Between these extremes are the business regulators, such as the Australian Securities and Investments Commission and the Australian Competition and Consumer Commission. In the case of the Australian Securities and Investments Commission, the responsible minister has the power to direct the Commission in general terms about the policies it should pursue and the priorities it should follow in performing any of its statutory roles. However, the minister does not generally have the power to direct it about individual cases.

Based on the roles assigned to it, the scheme regulator would have most in common with the business regulators: the Parliament and the Government would have responsibility for policy setting (including through publishing directions to the regulator) and the regulator would be given discretion to make administrative decisions under the establishing Act and delegated legislation. Within the parameters of its discretion, the regulator would need a high level of operational independence to ensure that its role in decisions on individual cases is not undermined.

Box 13.4
Garnaut Climate Change Review: 'Independent Carbon Bank'

The Garnaut Climate Change Review has proposed an 'Independent Carbon Bank' approach modelled on the Reserve Bank of Australia. Following such an approach, the Government would set an overall trajectory and the Independent Carbon Bank would be given responsibility to manage achievement of this trajectory over time. The Independent Carbon Bank could intervene in the market to smooth its operation and allow participants to borrow permits on a case-by-case basis within constraints.

The modern central bank and its role and structure have evolved over the past century in response to the unique challenges of monetary policy and the high premium placed on price stability. Central banks are assigned a high-level goal and exercise a high degree of operational independence in applying a range of policy and administrative tools to achieve that goal. This approach is effective because there is widespread consensus about the goal (in Australia's case, the inflation target) and also on the tools used to achieve it.

By contrast, emissions trading is a relatively new policy. In the context of the international climate change framework and broader domestic climate change strategy, its goals are likely to remain contentious for some time. There is also no time-tested agreement on the operation of the policy tools available under emissions trading.

In these circumstances it is more appropriate for the Government to remain integrally involved in both the goal setting and the policy tools to deliver those goals, at least for some time to come. This would also align responsibility for scheme settings and responsibility for international negotiations, which is important given the international dimension of climate change.

13.7 Preferred position

The scheme regulator would be given a high level of operational independence to implement the emissions trading legislation and apply it to individual cases. The regulator would be accountable to the responsible minister and subject to ministerial directions of a general nature only.

13.5.2 Accountability

Good governance requires that the regulator be properly accountable and that its processes and decisions are transparent. Accordingly, the regulator should be required to report on its operations each financial year to the responsible minister, for presentation to the Parliament. Furthermore, the regulator's decisions should be subject to appropriate review processes, including judicial review pursuant to the *Administrative Decisions (Judicial Review) Act 1977* and merits review of decisions by the Administrative Appeals Tribunal.

13.8 Preferred position

The regulator would be required to report on its operations each financial year to the responsible minister for presentation to the Parliament. The regulator's decisions would be subject to sound appeals processes, including judicial review pursuant to the *Administrative Decisions (Judicial Review) Act 1977* and merits review by the Administrative Appeals Tribunal.

13.5.3 Proposed structure of the regulator

The existing framework for the establishment of Australian Government bodies[3] suggests that a scheme regulator should be established as an incorporated body subject to the *Financial Management and Accountability Act 1997*. One of the benefits to this approach is the rigorous framework for the collection, management and expenditure of public money provided for by that Act. The regulator is expected to raise significant amounts of revenue through permit auctions and it will be important to ensure that it is managed accountably and transparently.

As a Financial Management and Accountability Act body, the regulator would be funded through budget appropriations and, as appropriate, through cost recovery for administrative functions, in accordance with the Government's *Cost Recovery Guidelines*.

It will be desirable to ensure that the regulator be able to draw on a range of skills and experience. This suggests that it be given a commission structure with a number of statutory office-holders (the exact number would be determined once the design of the scheme is finalised). The Government proposes that statutory office-holders be appointed by the responsible minister in accordance with the Government's policy on merit-based selection of agency heads and statutory officers, announced on 5 February 2008. For the purposes of administrative simplicity, staff would be engaged under the *Public Service Act 1999*.

13.9 Preferred position

The regulator would be established as an incorporated body subject to the *Financial Management and Accountability Act 1997*. The regulator would have a commission structure with a number of statutory office-holders appointed by the responsible minister.

13.5.4 Relationship with other regulators

The establishment of a scheme regulator raises the question of its relationship with other regulators with roles related to climate change, in particular, the Greenhouse and Energy Data Officer and the Office of the Renewable Energy Regulator.

The Greenhouse and Energy Data Officer is responsible for regulatory functions under the *National Greenhouse and Energy Reporting Act 2007,* and will collect emissions data for emissions trading and for other purposes. The integrity of the data collected

by the Officer is crucial to the effective operation of the Carbon Pollution Reduction Scheme, and there is significant overlap of liable entities between the two regimes. The Officer also has an important role in collecting data for purposes unrelated to emissions trading, for example on energy consumption and production.

The Renewable Energy Regulator is responsible for the regulatory functions under the *Renewable Energy (Electricity) Act 2000*, which is designed to implement Australia's renewable energy target. While there may be some overlap of liable entities between the renewable energy scheme and the Carbon Pollution Reduction Scheme, electricity retailers, which make up most of the liable entities under the renewable energy scheme, are unlikely to be liable entities under the Carbon Pollution Reduction Scheme.

There may be administrative and efficiency gains to consolidating all three regulators into a single regulatory agency. All three regulators will share some administrative systems and procedures, and all require significant information technology platforms. A unified corporate governance framework for activities such as planning, resourcing and compliance might not only reduce administrative costs but also improve regulatory outcomes. If such an approach were followed, care would need to be taken to ensure that the functions of the Greenhouse and Energy Data Officer and the Renewable Energy Regulator that do not relate to emissions trading are adequately protected.

The Government will assess the potential for consolidating the three regulators into one statutory agency, including the associated costs, benefits and implementation issues, with a view to addressing this matter more fully later in 2008.

Box 13.5
The Greenhouse and Energy Data Officer and the Renewable Energy Regulator

The Greenhouse and Energy Data Officer

The Greenhouse and Energy Data Officer collects information for a variety of purposes, including for the states and territories. The current functions of the Greenhouse and Energy Data Officer are:

- receiving applications to register from corporations required to report data under the *National Greenhouse and Energy Reporting Act 2007*
- making decisions about the application of the legislation to a facility in a particular situation or when a corporation has operational control of a facility
- administering the register, including registration and deregistration
- receiving reports about emissions, energy production and consumption, and greenhouse gas projects from registered corporations
- publishing relevant information on the website
- monitoring and investigating noncompliance, including through external audits
- enforcing obligations through infringement notices, enforceable undertakings and civil penalty proceedings.

The Renewable Energy Regulator

The Renewable Energy Regulator oversees implementation of the mandatory renewable energy target. The main functions of the Regulator are:

- maintenance of a number of public information registers
- accreditation of renewable energy power stations
- registration of renewable energy certificates
- assessments relating to electricity retailer's liabilities for renewable energy shortfall charge
- monitoring, investigating compliance and auditing.

The Regulator is supported by a small office (the Office of the Renewable Energy Regulator) with 11 full-time and one part-time staff.

The Carbon Pollution Reduction Scheme may involve (directly or indirectly) other Commonwealth and state and territory agencies. The scheme regulator will therefore also need to be able to exchange information with other relevant bodies.

13.10 Preferred position

The Government will assess the potential for consolidating the Greenhouse and Energy Data Officer, the Renewable Energy Regulator and the proposed scheme regulator.

13.6 Implementation

Effective implementation of the scheme will be as important as good design in meeting the Government's goal of reducing emissions by 60 per cent by 2050. The detailed preferred design positions and dispositions set out in this green paper, along with comprehensive coverage of alternative options, provide a strong platform for stakeholder feedback and finalisation of design this calendar year. This open process of public consultation and communication will also provide a good basis for Parliamentary scrutiny in 2009.

Detailed implementation planning is already under way to provide a high level of certainty for stakeholders about how the scheme will be administered. Planning includes the identification of key implementation tasks, required infrastructure and resources, implementation risks and risk mitigation measures.

As noted earlier, the Government's intention is for the scheme to commence in the 2010 calendar year. The Government also recognises the need to ensure that business is ready to implement the scheme at this time. For this reason there will be an extensive consultation process with business and other stakeholders over coming months. Using 1 July 2010 as an indicative start date for planning purposes, key implementation steps up to 2015 are outlined in Box 13.7.

Key elements of the scheme are already in place with the commencement of the *National Greenhouse and Energy Reporting Act 2007* on 1 July 2008. While the Act would require some amendments if the preferred positions outlined in this green paper were adopted, the commencement of the Act establishes key infrastructure for reporting emissions and will assist industry to put in place emissions reporting and build capacity prior to the commencement of obligations under the scheme. The fact that the Act is already in operation places Australia well ahead of comparable jurisdictions at this stage of the development of their emissions trading schemes.

To ensure smooth implementation of the scheme, work will commence as soon as practicable to build additional infrastructure and capacity required to deliver the scheme. Early implementation tasks will be undertaken in a way that does not prejudice final decisions on scheme design. These tasks include:

- establishing the national registry and other essential IT systems
- establishing the regulator
- education and outreach to enhance liable and other entities' understanding of the scheme and its requirements prior to the commencement of the scheme
- preparing and trialling a system for auctioning permits.

The Department of Climate Change released a request for tender, which closed on 15 July 2008, to establish and manage an Australian national registry under the Kyoto Protocol and, ultimately, for the Carbon Pollution Reduction Scheme. The request for tender seeks a Kyoto Protocol-compliant registry, software development capabilities to make the registry functional for the Carbon Pollution Reduction Scheme, and hosting and support services. The Government aims to have the registry with Kyoto Protocol functions in place by the end of 2008. Other registry functions related to the scheme will be in place in late 2009.

The Government will consult on key implementation issues that affect stakeholders, such as the development of the registry, compliance procedures and strategy, and education and information activities.

The Minister for Climate Change and Water will have primary responsibility for scheme implementation.

Box 13.6
Comparison with the Goods and Services Tax (GST)

Implementing the Carbon Pollution Reduction Scheme is not directly comparable to the challenges associated with the introduction of the Goods and Services Tax (GST). There are 7.6 million registered businesses in Australia. At introduction, the GST involved registering around 2 million entities, each of which was required to comply with the tax.

In contrast, significantly fewer companies – around one thousand – will need to prepare themselves to comply with the Carbon Pollution Reduction Scheme. In addition, most liable parties under the scheme will already be participating in the compliance arrangements – the National Greenhouse and Energy Reporting System – from 1 July 2008, two years before the commencement of the scheme.

Box 13.7
Timetable for introduction of the emissions trading scheme

2008		
3rd quarter	16 July	Release of the green paper
	July	Report of the Strategic Review of Climate Change Policies ('Wilkins Review') delivered to the Australian Government
	10 September	Submissions on green paper close
	End September	Final report of Garnaut Climate Change Review delivered to Australian governments
4th quarter	October	Treasury modelling expected to be released
	December	Public release of the white paper and exposure draft of scheme legislative package, comprising the Bill, explanatory material on the Bill, an outline of matters to be included in legislative instruments, and proposed consequential amendments to other legislation Government announces final decisions on the full range of design issues including: • initial coverage of the scheme • medium-term national emissions target range • indicative national emissions trajectory up to 2012–13 • approach for setting scheme caps from 2010–11 to 2014–15 • quantitative limits on the use of Kyoto units from 2010-11 up to 2012–13, and the types of units that will be recognised • restrictions on conversion of Australian carbon pollution permits for sale in international markets from 2010–11 up to 2012–13 National registry operational with Kyoto Protocol functions and connected to International Transaction Log
2009		
1st quarter	February	End of consultation period on exposure draft of legislative package
	March	Bill to enact scheme introduced into Parliament
2nd quarter		Government aims to achieve passage of the Bill through Parliament during the winter sittings Testing of auction design commenced
	June	Report on streamlining existing climate change mitigation measures presented to the Council of Australian Governments
3rd quarter		Act establishing scheme in force Public consultation on scheme regulations[4] Scheme regulator formally established

Box 13.7
Timetable for introduction of the emissions trading scheme (continued)

2009		
4th quarter		National registry operational with Carbon Pollution Reduction Scheme functions Initial training conducted for registry users
2010		
1st quarter		Government announces: • extension of national emissions trajectory up to 2014-15 • scheme caps for first five years of scheme (2010–11 to 2014–15) • ten years of scheme gateways after 2014–15 • approach for expanding cap to accommodate increases in coverage • quantitative limits on use of Kyoto units up to 2014-15, and the types of units that will be recognised • provisions for conversion of Australian carbon pollution permits for sale in international markets up to 2014–15 Scheme regulations and other legislative instruments finalised First auction of permits
3rd quarter	1 July	Start of first compliance year under the scheme
2011		
2nd quarter	30 June	End of first compliance year under the scheme
4th quarter	31 October	Deadline for liable entities to submit emissions reports through National Greenhouse and Energy Reporting System
	November	Regulator notifies liable entities of the number of eligible compliance permits they are required to surrender
	Mid-Late December	Deadline for surrender of eligible compliance permits for first compliance year
2012		
4th quarter	31 December	End of first commitment period under the Kyoto Protocol
2013		Government announces final decisions on coverage of agriculture
2015		Possible inclusion of agriculture in the scheme First scheduled public strategic review by independent expert committee

Endnotes

1 Garnaut Climate Change Review, *Draft Report – June 2008*, Commonwealth of Australia, 2008.

2 Garnaut Climate Change Review, *Emissions Trading Scheme Discussion Paper*, March 2008, p 41. This position is reiterated in the Garnaut Climate Change Review *Draft Report – June 2008*, Commonwealth of Australia, 2008.

3 Department of Finance and Administration, *Governance Arrangements for Australian Government Bodies*, Commonwealth of Australia, 2005.

4 Note that consultation on some regulations will commence well before this time.

A. Comparison of emissions trading scheme design approaches

Part I: Proposed Australian models

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Scheme objectives	The objective of the Carbon Pollution Reduction Scheme is to meet Australia's emissions reduction targets in the most flexible and cost-effective way; to support an effective global response to climate change; and to provide for transitional assistance for the most affected households and firms. Design options are to be assessed against the following assessment criteria: • environmental integrity • economic efficiency • minimisation of implementation risk • policy flexibility • promotion of international objectives • implications for the competitiveness of traded and non-traded industries • accountability and transparency • fairness.	Scheme based on an established policy objective of reducing emissions. In designing the emissions trading scheme, there should be a single clear objective, 'to provide a transactional space that enables the transmission of permits to economic agents for whom they represent the greatest value'. Furthermore, for a market in emissions permits to operate effectively and efficiently, five principles must be met. There needs to be scarcity, tradeability, credibility, simplicity and integration with other markets. Successful implementation will result in observable outcomes, such as: • low transaction costs • efficient price discovery • emergence of forward markets and other derivatives • investor confidence • low-cost mitigation spread over time in a way that minimises the present value of costs.	• A comprehensive national emissions trading scheme that would: • deliver sustained long-term greenhouse gas (GHG) abatement • include appropriate long- and short-term incentives for the commercialisation and deployment of the widest range of technologies at least regulatory cost • minimise the overall cost to the economy and limit the impact on long-term economic growth • not prejudice the competitiveness of key trade-exposed sectors.	A comprehensive national emissions trading scheme accommodating multiple objectives: • environmental integrity • minimisation of impacts on the economy • promotion of investor certainty • flexibility • equity.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Long-term emissions reduction target	The Commonwealth Government has set a target to reduce emissions by 60% below 2000 levels by 2050.	Longer-term emissions limit should be expressed as a trajectory, which will define a budget over a number of years. Government will set the emissions limit. Prior to a global agreement, it is important that Australia's emissions limit is ambitious enough to be seen by the international community as a commitment to serious action. With a cooperative global arrangement, the emissions reduction goal should become more ambitious (see Emissions trajectories, below).	TGET did not propose a long-term emissions reduction target in its report. The report suggested that the Government set a long-term aspirational goal for emissions reductions.	The Australian Government has set a target to reduce emissions by 60% below 2000 levels by 2050. The emissions trading scheme's long-term target should be consistent with achieving this economy-wide goal.
Short- and medium-term targets	At the end of 2008, the Government will announce a range for 2020 and the indicative national emissions trajectory for the period from 2010–11 to 2012–13. The Government will take into account a range of factors, including the work of the Garnaut Climate Change Review and modelling undertaken by the Treasury.	Four trajectories should be specified upon establishment of the scheme. The first, up to 2012, will be based on Australia's Kyoto commitments. The other three for the post-2012 period reflect increasing levels of ambition.	Government should set a series of short-term annual quantity caps for overall emissions for, say, 10 years into the future—initially to 2020. Five-year reviews to allow for calibration of the sequence of short-term emissions caps.	No target announced. Annual caps set for the first 10 years of the scheme.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Emissions trajectories: Cap duration and extension intervals	Caps could be set for five years in advance, or longer in the event that international obligations extend for longer than this. Scheme caps would be extended by one year, every year, to maintain a five year cap horizon. In early 2010, the Government will announce scheme caps for the first five years of the scheme (2010–11 to 2014–15) and ten years of gateways beyond this period.	Five years notice to be provided by Government before movement to another trajectory. Government should set the emissions limit for Australia. This emissions limit should be expressed as a trajectory of annual emissions targets over time, which define long term budgets (see Emissions trajectories: Gateway duration and extension).	Caps could be set at five-yearly review points. At the time of the first review in 2015, short-term caps might be extended to 2025.	Annual caps set for the first 10 years of the scheme; gateways set for the subsequent decade. As a minimum, a range of caps to be set in 2008, firmed up as soon as possible thereafter.
Emissions trajectories: Gateway duration and extension	The Government to provide guidance over future scheme caps beyond the initial certainty period through the use of a gateway in each of the following years, to the end of the gateway period. The initial length of the gateway will be 10 years beyond the minimum five years of scheme caps. Gateways will be extended by five years, every five years, as part of a strategic review of international conditions and Australia's likely future international commitments.	The Garnaut Review proposed a variation on the gateway concept: Four trajectories should be specified upon establishment of the scheme. The first, up to 2012, will be based on Australia's Kyoto commitments. The other three for the post-2012 period reflect increasing levels of ambition. Movement between them should be based on determining the comparability of Australia's response to international effort.	At commencement, the Government could set indicative medium-term emissions bands (or gateways) to provide guidance to for the likely path of future caps for the period 2021–2030 Gateways set at five-yearly review points. At the time of the first review in 2015, gateways might be extended to 2035.	Every five years gateways would be updated (narrowed) for the first five years and extended for a further five years.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Sectoral coverage	Coverage of the stationary energy, transport, fugitive emissions, industrial processes, waste and forestry sectors at scheme commencement and all six greenhouse gases counted under the Kyoto Protocol. Forestry to be included on an 'opt in' basis from scheme start - only forestry activities that are recognised in Australia's Kyoto Protocol accounts will be eligible for inclusion in the emissions trading scheme. Deforestation would not be included in the emissions trading scheme. It is not practical to include agricultural emissions in the emissions trading scheme at commencement.Dispensation to cover agricultural emissions in 2015 with final decision in 2013. The Government has committed to: cut fuel taxes on a cent for cent basis to offset the initial price impact on fuel associated with the scheme and will periodically assess the adequacy of this measure for three years and adjust accordingly. At the end of the three year period it will review this mechanism. To assist rural and regional areas, the Government will provide an equivalent rebate to businesses in the agricultural and fishing industries for three years. It will also cut fuel taxes cent-for-cent for heavy vehicle road users, to offset the initial price impact associated with the scheme. The Government will review this measure after one year.	All six Kyoto gases. Stationary energy, industrial processes, fugitives and transport from scheme outset. Waste and forestry to be included as soon as practicable. The inclusion of agriculture to be subject to progress on measurement and administration.	Maximum practical coverage of all sources and sinks, and of all GHGs. Practical considerations suggest initially excluding agriculture and land-use emissions.	All six Kyoto gases. Stationary energy, transport, industrial processes and fugitives (possibly excluding open-cut coal mines). Waste and agriculture to be further investigated.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Point of obligation	Point of obligation be set as a combination of direct and indirect: • Stationary energy (combination of direct emitters above 25,000t CO_2-e and fuel supplier for small emitters) • Transport (upstream point of obligation only, via excise system) • Industrial process emissions (direct emitters, 25,000t CO_2-e threshold) • Fugitive emissions (direct emitters only 25,000t CO_2-e threshold) • Waste (direct emitters only, threshold to be determined).	Set at point of emissions where efficient. An upstream or downstream point of obligation preferred where transaction costs are lower, accuracy of emissions measurement higher, or coverage greater.	Permit liability placed on direct emissions from large facilities and on upstream fuel suppliers for other energy emissions	Direct emitters above 25 kt CO_2-e. Some upstream liability (gas retailers, petroleum refineries and refined petroleum importers). Voluntary opt-out of direct liability for >25 kt CO_2-e emitting gas users who purchase all gas from retailers.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Definition of a liable entity	In general, entities with operational control over covered facilities or activities would be liable for emission obligations arising from those facilities or activities under the scheme. Where multiple entities exercise a degree of operational control over a covered facility or activity, a single responsible entity would be required to register and meet scheme obligations. For corporations, obligations would be placed on the controlling corporation of a company group where either the controlling corporation or a member of the group has operational control over a covered facility or activity. Unincorporated entities would also be liable under the scheme if they have operational control over a covered facility or activity. Further consultation and analysis would be undertaken on the definition of liable entities under the scheme in relation to the forestry sector and upstream fuel suppliers.	No specific definition of a liable entity, but referred to as 'party with an obligation'.		Individual firms would most likely be the covered parties under the scheme, in accordance with their responsibilities under the National Greenhouse and Energy Reporting System. Firms would be required to monitor and acquit permits where the total emissions met or exceeded the threshold for emissions liability.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Domestic offsets	The scheme's broad initial coverage leaves limited scope for domestic offsets. Offsets would not be allowed from agriculture emissions in the period prior to coverage of these emissions.	Domestic offsets would have a small role, given broad coverage. Unlimited offset credits should be accepted from forestry before and during coverage in the scheme. The appropriateness of an offset regime for agriculture to be analysed further in the context of coverage of these emissions and advice provided in the supplementary draft and final reports.	Recognition of a wide range of credible domestic and international carbon offset regimes.	No restrictions on liable parties' use of domestic offset credits to meet their compliance obligations. The ability to create offsets to be clearly stated, and subsequently treated, as a transitional measure until broader scheme coverage is achieved.
Banking of permits	Unlimited banking of permits allowed under the scheme.	Unlimited hoarding (banking) of permits will be allowed, and the independent regulator, the Independent Carbon Bank, will be able to lend permits within five-year periods. No hoarding of 2010–12 permits could be allowed if there were price constraints in a transition period.	Provision should be made for firms to be able to bank, or carry forward, dated emissions permits for use against future emissions liabilities.	Unlimited banking allowed. This provision would be reviewed as required, and subject to change with an appropriate period of notice (five years).
Borrowing of permits	There would be a limited amount of short term borrowing by allowing liable entities to surrender up to a certain percentage (less than five per cent) of their liabilities by using permits dated from the following year.	Official lending of permits by the independent carbon bank to the private sector allowed within five-year periods. May be subject to limits, in terms of quantity and time, determined by the independent authority.	Not permitted.	Limited 'administrative flexibility' permitted for compliance (1% of a party's liability of permits dated compliance year + 1).

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Price cap	The scheme would have a transitional price cap for the period 2010–11 to 2014–15. The level of the price cap will be set high enough above the expected permit price, taking into account the allowance for banking, to provide a very low probability of use. The price cap would also be reviewed at the first review point, taking into consideration banking and borrowing arrangements, importation allowance for international units, the maturity of the market and future international linking commitments.	Not supported, except if decision made to have a price cap during the transition period to end 2012. Penalty to be set as a compliance mechanism. Penalty does not replace obligation to acquit permits; a make-good provision would apply.	During the initial, or settling-in, phase of the scheme an emissions fee (a de facto cost cap which represents a pre-set fee for every tonne by which emissions exceed the permits held by a firm) should be set at a relatively low level. Beyond that, the level of the fee should move further away from expected permit prices in order to reinforce the abatement incentive and ensure tighter compliance with the desired emissions cap. A make-good provision would be undesirable at the outset of the scheme.	A civil penalty set at a level to encourage compliance and cap scheme costs. Level should be fixed (set in the light of estimated costs of compliance) and set when firm caps are set. No make-good provision during the first 10 years of the scheme.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Assurance (verification)	Assurance would be carried out in accordance with guidelines made under the National Greenhouse and Energy Reporting System Act and standards to be produced by the Australian Government's Auditing and Assurance Standards Board. Large emitters (obligations under the scheme of 125,000 t CO2-e or more) required to have their annual emissions reports assured by an independent accredited third-party prior to their submission. The scheme regulator would have powers to conduct assurance audits. The regulator would also have the power to review an annual emissions report for up to four years after its submission, except in the case of fraud, in which case the period would be unlimited. The Government would investigate further the scope to align financial and emissions reporting and verification systems.	For a sector to be covered by an emissions trading scheme, there must be a reliable and accurate way to monitor, measure or estimate, and verify emissions from that sector.	A new 'fit for purpose' monitoring, reporting and verification system would be required.	The scheme regulator should develop a credible verification requirement for all covered parties under the scheme. The requirement should specify whether every covered party will be required to have third-party verification of its emissions reports, and how often verification will be required (i.e. every year).

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Reporting and compliance	The National Greenhouse and Energy Reporting System will be the starting framework for monitoring, reporting and assurance under the scheme, and elements of that system would be strengthened to support the scheme. A single report would be sufficient to satisfy an entity's obligations under both the National Greenhouse and Energy Reporting System and the emissions trading scheme, with reports to be submitted by 31 October each year. The compliance period would be on a financial year basis.	Compliance period not defined.	A single national reporting system needs to be established in a way that is consistent with the monitoring, reporting and verification needs of the trading scheme and the commitment to streamline the reporting burden across all jurisdictions.	Mandatory reporting above specified thresholds by covered parties under the *National Greenhouse and Energy Reporting Act 2007*, with some amendments or regulatory provisions. Compliance period to be consistent with the reporting period under NGERS established by Act. The Act requires: • reporting for the Australian financial year • reporting within four months of the end of the financial year.
Linking to international schemes/markets	In the longer term, the Government has a preference for open linking within the context of an effective global emissions constraint. In the initial years of the scheme the Government proposes not to enable the export of Australia's own Kyoto Protocol compliance units.	Opportunities for international linkage of the Australian ETS should be sought in a judicious and calibrated manner. The independent regulatory authority would certify individual permit markets as being of a suitable standard for linking. Once a market was certified as being suitable then unlimited acquittal of permits from the overseas market would be allowed. Deep integration with other markets (that is, joint regulation) should be sought where appropriate and where prospects for policy coordination exist. It makes sense to link the Australian and New Zealand markets.	Capacity, over time, to link to other national and regional schemes in order to provide the building blocks of a truly global emissions trading scheme.	Linking with the Kyoto flexibility mechanisms (with some exceptions). Possible linking with overseas schemes in the future.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Acceptance of Kyoto units	Liable entities would be able to meet their obligations by using eligible Kyoto units for compliance in the scheme. In the short term, there will be limits on the number of international offset credits that liable entities can surrender for compliance. International emissions units that would be accepted, subject to this limit, would be CERs and ERUs. However, temporary or long-term CERs would not be accepted.	To encourage participation by low-income developing countries that do not yet have targets, provision should be made for international offsets, but with restrictions on the source and quantity of offset credits that can be used under the Australian scheme.	CDM credits should be accepted.	In the short term, unilateral links to the flexibility mechanisms of the Kyoto Protocol are recommended. However, tCERs (temporary certified emission reduction units) and lCERs (long-term CERs) would not be accepted. The regulator would set overall limits on the volume of CERs and emission reduction units (ERUs) that could be used for compliance under the scheme.
Acceptance of non-Kyoto units	International non-Kyoto units would not be accepted for compliance in the scheme. This would be reviewed for the post-2012–13 period in the light of future developments in international negotiations.	No constraints specified. Should consider accepting credits from avoided deforestation.	Units should be robust and credible. No other constraint specified.	The Taskforce did not consider unilateral linking to any other trading schemes. The Taskforce recommended that emphasis be placed on designing the scheme with features that are domestically appropriate but that allow the active consideration of bilateral links with overseas schemes in the future.
Exporting permits	In the initial years of the scheme the Government proposes not to enable the export of Australia's own Kyoto Protocol compliance units.	Linking to other sound and well governed mitigation systems is desirable. NZ, EU and emerging US and Japan markets are options.		Unilateral links to the flexibility mechanisms of the Kyoto Protocol. Consideration of bilateral links with overseas schemes in the future.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Permit allocation (free allocation/ auctioning)	Allocations should progressively move towards 100 per cent auctioning as the scheme matures, subject to provision of transitional support for emissions-intensive trade-exposed industries and strongly affected industries.	Permits released according to emissions reduction trajectory. All permits auctioned at regular intervals. (Note, some permits may be used in lieu of cash in providing transitional assistance to emissions-intensive, trade-exposed firms at risk). It is desirable that permits be sold into the market as soon as possible (including some ahead of their scheduled release date), to promote price discovery.	Those permits that are not freely allocated to strongly affected or trade-exposed emissions-intensive firms could be progressively auctioned. A small number of future-dated permits, beyond 2020, would also be periodically auctioned in order to promote the establishment of liquid forward markets.	Some free allocation; remainder auctioned with a mix of spot and advance auctions.
Use of auction revenue	Every cent raised for the Australian Government from the scheme will be used to help Australians – households and businesses – adjust to the scheme and to invest in clean energy options.	The Report proposes that all of the revenue be returned to households or business: • Half of the permit revenue should be returned to the household sector • Up to 30 per cent of permit sales revenue could be returned to the business sector as payments to trade-exposed firms • Twenty per cent of the permit revenue should be allocated to support for research, development • Commercialisation of low-emissions technologies • Cash reserves should be used to purchase international permits/ offsets to reconcile domestic emissions with international commitments.	Revenues used, in the first instance, to support the emergence of low-emissions technologies and measures to improve energy efficiency.	Direct linking of auction revenue to expenditure (hypothecation) not proposed. Priority uses for revenue may be R&D in low-emissions technology or support for groups adversely affected by the scheme.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Treatment of households	The Government is also committed to provide low-income households with increases in assistance through the tax and payment system and all households with other assistance to address the impact on their living standards. It is committed to: • Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and provide other assistance to meet the overall increase in the cost of living flowing from the scheme. • Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme. • Provide assistance to middle-income households to help them meet any overall increase in the cost of living flowing from the scheme. • Review annually in the Budget context the adequacy of payments to beneficiaries and recipients of family assistance to assist households with the overall impacts of the scheme,. • Provide additional support through the introduction of energy efficiency measures and consumer information.	Assistance could be provided through the tax and welfare system, and to facilitate greater efficiency in energy use and reduce dependence on emissions-intensive goods and services.	Does not identify a preferred method of assistance, but notes that households should not be shielded from the price incentive to change behaviour.	Assistance warranted for households, in particular low-income households, to manage higher energy prices as a result of the scheme. A wide range of measures should be considered, including energy-efficiency. Important to ensure that any assistance is applied in a manner that does not dampen the incentive for behavioural change.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Mechanisms for emissions-intensive, trade-exposed industry (EITE) assistance	Assistance be provided to EITE industries with upfront (ex-ante) free allocations of permits contingent on continued production. Assistance would be calibrated over time such that the EITE sector broadly shares in the task of meeting the national commitment to reduce emissions and withdrawn in the event of acceptable international action.	Global and sectoral agreements to achieve comparable treatment of emissions in important competitors to be pursed as a priority. If agreements have not been reached post-2012, assistance should be provided to account for material distortions arising from major trading competitors not adopting commensurate emissions constraints.	Allocate free permits every five years to existing investments in EITE sectors, equivalent to the carbon costs flowing both from their direct (industrial process) and indirect (energy and embodied production inputs) post-tax costs.	Free permit allocations made annually based on previous year's output, subject to annual true-up. Linked to output, based on baseline levels of energy-intensity (direct and indirect emissions). Closing firms must hand back permits.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Eligibility for and calculation of assistance—new and existing EITEs	Wherever possible, simple, clear and transparent methodologies should be used to determine those entities that are eligible for EITE assistance and to calculate the assistance for these entities. EITE assistance should be provided to those traded activities which face the largest material impact from the introduction of the scheme. Assistance could be provided with respect to direct and indirect (electricity) emissions from an EITE activity. Assistance could be provided on the basis of an industry-average emissions intensity baseline. Assistance could be provided in respect of activities that have an emissions intensity above 1500t/$m, but at a rate that does not cover all of the emissions liabilities of the activity. Overall, allocations to EITE activities could be up to around 30% of national emissions.	Independent Carbon Bank to apply the following approach to EITE assessment: • Materiality to the firm of the impact of the Australian emissions price being higher than that in competitor and potential competitor economies • Maximum assessment calculation based on the EITE product price that would have occurred if all substantial competitor and potential competitor countries applied emissions restrictions at similar levels to Australia • After the first year, firms' entitlements to payments will be discounted by an efficiency factor.	A 3.5% threshold for energy costs as a proportion of total operating costs as a starting point for further threshold design. Decisions about whether to continue free provision of permits would be made as part of periodic reviews of the operation of the scheme.	EITE identification criteria specified. A possible emissions intensity threshold of 1,200 t CO_2-e per million dollars of revenue suggested for further investigation. A 3.5% threshold (energy costs as proportion of total operating costs) used as basis for modelling.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Use of benchmarks for EITEs	Within traded industries, assistance should be determined on the basis of the industry-average emissions intensity for an activity. This would be reduced over time by an adjustment factor to account for opportunities to reduce emissions and the need for EITEs to contribute to the national emissions reduction effort.	Not included.	Over time, allocations to offset direct emissions could be calculated as if firms were using world's best practice low-emissions technologies. Timeframes for moving to best practice benchmarks not specified. Allocate free permits for any new investments in EITE sectors to offset direct emissions as if the investments were using world's best practice low-emissions technology.	*Existing facilities*—move to Australian best practice after 10 years. *New facilities*—commence using international best practice. Include benchmarks for indirect emissions (based on energy intensity of output).
Assistance to strongly affected industries	Provide assistance to workers and regions in the form of structural adjustment assistance. Provide support for investment in CCS research and technologies. Provide some limited direct assistance to coal-fired electricity generators.	$1 to $2 bn fund proposed to support new investments that reduce emissions in coal-based generation, and as a form of 'pre-emptive' structural adjustment assistance. No direct assistance for generators as compensation for loss.	Annual permits, each dated for a given year, would be issued free of charge to compensate firms for a disproportionate loss in asset value from the introduction of the scheme.	A once-off, up-front, allocation of permits free of charge could be made to firms that can demonstrate: • a likelihood of experiencing disproportionate loss • they are not trade-exposed • they are emissions-intensive • they have very large, sunk capital costs, and • their ability to pass on costs is constrained by domestic competitors that face no commensurate increase in costs as a result of the scheme.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Governance arrangements/ independent scheme regulator	Establish an independent scheme regulator, whose primary responsibilities will be to monitor and enforce compliance, run auctions for permits, allocate free permits according to rules clearly specified by the Government, and maintain the national registry. Independent scheme reviews are proposed for a number of scheme components every five years.	• Scheme administered by independent authority (independent carbon bank). Responsible for: • lending permits within five year periods • administering movement from one emissions trajectory to another • releasing permits • purchasing permits abroad as required to reconcile domestic emissions in particular years with international agreements or to provide for the honouring of the five-year forward commitment after a change in trajectory • assessing EITEs and making payments if applicable • making decisions on lending and interest rates • supervising market participants and stabilisation interventions • monitoring the creditworthiness of borrowers • more generally, the relationship between hoarding and lending and the stability of the market • monitoring trade and ensure conditions have been met • monitoring the integrity of the market.	A single national scheme implemented by the Australian Government is the most effective policy governance model. This would allow the scheme to be implemented with the maximum link with Australia's international climate change strategy and in a manner consistent with broader economic instruments.	Implementation led by the Commonwealth, in consultation with states and territories. Separation of policy and operational functions (e.g. scheme developer and scheme regulator). *Scheme developer* modelled on Reserve Bank of Australia Board (new, independent body). *Scheme regulator* to manage day-to-day scheme operation. Governments (i.e. COAG) make decisions (e.g. set caps and gateways) based on recommendation from scheme developer.

Design feature	Green paper preferred position	Garnaut Draft Report	Task Group on Emissions Trading (TGET) proposal	National Emissions Trading Taskforce (NETT) proposal
Complementary measures	The emissions trading scheme will be the primary measure to achieve Australia's emissions reductions targets, other measures will be required to address market failures that a carbon price alone cannot overcome, or to deal with the distributional consequences of the scheme. Across levels of government, a coordinated approach to assessing and developing complementary measures is desirable. The Council of Australian Governments is currently developing a set of criteria to assess whether other measures are genuinely complementary, and reviewing existing programs to assess whether they meet those criteria. State and Territory Governments are also considering the ongoing role of the Greenhouse Gas Abatement Scheme and the Queensland Gas Scheme. The Government will continue to work cooperatively with the New South Wales, Australian Capital Territory and Queensland governments to assist them in their development of appropriate transitional arrangements.	Interaction with abatement schemes (e.g. MRET and mandatory energy efficiency schemes) to be considered in full reports. Some complementary GHG abatement measures will be necessary, particularly to address market failures (e.g. could include investment in low-emissions technology R&D, public transport and energy efficiency).	Government support for technology beyond the R&D stage needs to be carefully targeted and designed to ensure that it builds on, and does not conflict with, price signals provided by an emissions trading scheme or other market frameworks (for example, energy market reforms).	Complementary measures (e.g. renewable energy target schemes) continue in parallel. NSW/ACT GGAS and Queensland Gas Generation Scheme to transition into the national emissions trading scheme; transition arrangements to be developed. The scheme to be complemented by other GHG abatement policies, particularly relating to energy efficiency and low-emissions technology R&D.

Part II: International schemes

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Status	Currently operating, Phase I 2005–07, Phase II 2008–12. Established under directive 2003/87/EC, adopted on 25 October 2003.	Phase III proposed for 2013–20. European Commission currently considering a directive amending Directive 2003/87/EC (January 2008).	Climate Change (Emissions Trading and Renewable Preference) Bill tabled in New Zealand Parliament on 4 December 2007 and referred to the Finance and Expenditure Committee. The committee handed down its report on 16 June 2008, recommending by majority that it be passed with amendments.
Scheme objective	To promote reductions of GHG emissions in a cost-effective and economically efficient manner.	To promote reductions of GHG emissions in a cost-effective and economically efficient manner.	That a New Zealand Emissions Trading Scheme support and encourage global efforts to reduce GHG emissions by: • reducing New Zealand's net emissions below business as usual levels • complying with New Zealand's international obligations, including Kyoto Protocol obligations while maintaining economic flexibility, equity, and environmental integrity at least cost in the long term.
Long-term emissions reduction targets	Global emissions of GHGs will need to be reduced by approximately 70% compared to 1990 levels.	By 2050, global GHG emissions should be reduced by at least 50% below their 1990 levels.	As per the Kyoto Protocol, and its successor, with national/regional targets if no successor to Kyoto emerges. The Prime Minister has announced national carbon neutrality goal for 2020.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Short-term targets	Kyoto Protocol target of an 8% reduction in emissions by 2008 to 2012 compared to 1990 levels.	Reduce the overall GHG emissions of the European Community by at least 20% below 1990 levels by 2020, and by 30% provided that other developed countries commit themselves to comparable emissions reductions and economically more advanced developing countries contribute adequately according to their responsibilities and respective capabilities.	As per international commitments.
Sectoral coverage	Combustion installations with a rated thermal input exceeding 20 MW (except hazardous or municipal waste installations), mineral oil refineries and coke ovens. Specific thresholds on other industries, including the production and processing of ferrous metals, mineral industry, and the timber and paper pulp industries based on production capacity. Installations or parts of installations used for research, development and testing of new products and processes not covered. Carbon dioxide only.	Combustion installations with a rated thermal input exceeding 20 MW, combined with an emission threshold of 10,000t CO_2/yr (as long as their rated thermal input does not exceed 25 MW). Emissions from biomass excluded. Other industries to report as per Phase I, with the inclusion of aluminium and certain ferrous metal refineries, chemical industrial processes (both carbon dioxide and nitrous oxide reporting in some cases), capture, transport and geological storage of all GHGs. Installations or parts of installations used for research, development and testing of new products and processes and combustion installations exclusively using biomass not covered. Nitrous oxide and perfluorocarbons will be added to the scheme.	All sectors and all six major greenhouse gas emissions to be covered by 2013: • Forestry—1 January 2008 • Liquid fossil fuels (opt-in for jet fuel)—1 January 2011 • Stationary energy—1 January 2010 • Industrial processes—1 January 2010 • Industrial processes (synthetic gases)—1 January 2013 • Agriculture—1 January 2013 • Waste—1 January 2013 • Other removal services (embedded products)—1 January 2010 • Other removal products (CCS)—to be determined • Other removal products (HFCs & PFCs)—1 January 2013.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Point of obligation	As for sector coverage.	As for sector coverage.	Upstream wherever possible to minimise the number of compulsory participants and therefore administration costs. About 200 participants expected, excluding forestry.
Definition of a liable entity	As for sector coverage.	As for sector coverage.	Activities that require compulsory participation (with different entry dates) in the NZ ETS, including: • deforesting pre-1990 forest land • liquid fossil fuels • stationary energy • industrial processes • agriculture • operating a disposal facility (waste).
Domestic offsets	Not permitted.	Yes, projects that reduce GHG emissions in the Community should be allowed to issue allowances provided they comply with certain conditions necessary to safeguard the proper functioning of the EU ETS.	The scheme provides for participants who conduct activities that remove GHG emissions from the atmosphere to earn one emission unit for each tonne of emissions they remove. They can then sell the permits they earn on the market for a profit.
Emissions trajectories: Cap duration and extension intervals	Dependent on member state national allocation plans. For the five-year period beginning 1 January 2008, and for each subsequent five-year period, each member state shall decide upon the total quantity of allowances it will allocate for that period subject to review by the European Commission.	The cap would be set and announced to 2020. Each country would be allocated emissions and renewable energy targets.	The scheme will operate within the international cap on emissions that is agreed through international negotiations (currently through the Kyoto Protocol). In the event of no international agreement after 2012, a national cap will be developed.
Emissions trajectories: Gateway duration and extension	Not Applicable	Linear reduction of Phase II cap that continues the reduction path beyond 2020, amounts to 1.74% per year, arriving at a reduction of 21% below reported 2005 emissions.	

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Banking of permits	Allowed within, but not between, Phases I and II. Unrestricted after 2012.	Allowances remain valid throughout the trading period and any surplus allowances can now be banked for use in subsequent trading periods.	Permits can be banked for future use. Assigned amount units banked from the Kyoto Protocol commitment period cannot be used for compliance in the NZ ETS after 2012.
Borrowing of permits	Limited administrative borrowing within, but not between, phases.	Limited administrative borrowing within, but not between, phases.	Limited borrowing allowed by releasing some of the next year's permits before acquittal time. These can be used for acquittal as soon as they are released.
Price cap	No price cap. Financial and make-good penalties apply. Excess emissions penalty set at EUR 40 (Phase I) or EUR 100 (Phase II) for each tonne of CO_2-e emitted by that installation for which the operator has not surrendered allowances, in addition to make-good provision.	Yet to be determined.	No price cap. Financial and make-good penalties will apply.
Assurance (verification)	Annual verification to ensure that: • data in the installation's emissions report are fairly stated • the installation is in conformity with the agreed greenhouse gas emissions permit and with its associated monitoring methodology and other relevant requirements.	Regulation adopted through comitology (i.e. committee) should provide common requirements for verification, in order to guarantee a certain level of quality of the verification process, while further improvements should be enabled through amendments to Annexes IV and V of the Directive. This regulation should also enable Community-wide accreditation for verifiers for the benefit of the internal market.	Participants are required to: • calculate their level of emissions, using prescribed methodologies • retain sufficient records to allow verification of emissions calculations • report their level of emissions • provide information, if required by the chief executive (scheme administrator), to allow the chief executive to verify compliance.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Reporting and compliance period	Installations report emissions annually. Each year, member states submit to the commission a report on emissions.	Experience with monitoring and reporting so far showed some degree of divergence of member states' practices. In order to improve overall performance of the monitoring and reporting system across the EU, a regulation adopted through comitology should replace the current guidelines.	Firms to monitor and report their emissions for the year (two years for agriculture) prior to entry to the NZ ETS on a voluntary basis (penalties for errors in reporting in that year would not apply). Firms report annually by 31 March on any emissions or removals that resulted from their activities in the previous year (except for post-1989 forest participants). Firms must retain records showing their emissions and removed emissions for seven years. Initial compliance periods for sectors to be one year from entry into the scheme except for forestry, which will have a two-year initial compliance period.
Linking to international schemes/markets	Member states may participate in international emissions trading as parties to the Kyoto Protocol with any other party included in Annex B.	Member states may participate in international emissions trading as parties to the Kyoto Protocol with any other party included in Annex B. Consideration of acceptance of units from other emissions trading systems in third countries and administrative entities.	International linking considered to be critical to reduce costs and provide flexibility. Few limits proposed.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Acceptance of Kyoto units	Participants may surrender Kyoto units. Trade in assigned amount units (AAUs) not permitted.	Once a future international agreement on climate change has been reached, CDM credits shall only be accepted in the EU ETS from third countries that have ratified the international agreement. Principle of subsidiarity may still apply.	Participants may surrender Kyoto units (AAUs, ERUs, CERs, lCERs and tCERs) to meet their NZ ETS obligations, subject to some restrictions (e.g. CERs from nuclear projects will not be permitted). Kyoto units can be acquired overseas or domestically. The Bill does not contain a provision to limit the volume of Kyoto units that can enter the NZ ETS, but gives the responsible minister the ability to place restrictions on the entry of classes or subclasses of Kyoto units and on the transactions that may be registered in respect of those units. New prohibition on the post-2012 carryover of AAUs purchased before 2012.
Acceptance of non-Kyoto units	Not permitted.	Possible acceptance of non-Kyoto units depending on future agreement and in accordance with a priority for least developed countries when revenues generated from auctioning are used to facilitate developing countries' adaptation to the impacts of climate change. It is appropriate to give certainty on the acceptance of credits from projects started in least developed countries after 2012, even in the absence of an international agreement. This entitlement should apply to least developed countries until 2020, provided that they have by then either ratified a global agreement on climate change or a bilateral or multilateral agreement with the Community.	The Bill allows for linking to other countries' domestic trading schemes (overseas registries and emissions units can be approved by regulation when such linking is considered appropriate).
Exporting permits			Clause 28 (new section 30E) of the Bill allows for the conversion of New Zealand emissions units for transfer to overseas buyers.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Permit allocation (free allocation/auctioning)	**Phase I** At least 95% of permits freely allocated. Member states to decide the total quantity of allowances allocated to each installation. **Phase II** At least 90% of allowances freely allocated. Member states to decide the total quantity of allowances they will allocate for that period and initiate the process for the allocation of those allowances to the operator of each installation. This decision shall be taken at least 12 months before the beginning of the relevant period, taking due account of comments from the public.	Full auctioning from 2013 onwards for the power sector and carbon capture and storage. For installations in sectors other than electricity generators, a gradual transition is appropriate, starting with free allocation at a level of 80%, decreasing by equal amounts each year, arriving at zero free allocation by 2020. Five per cent of the Community-wide quantity of allowances over the period 2013 to 2020 shall be set aside for new entrants.	Free allocation, with option for auction at later date. The phase-out of free allocation for industry and agriculture runs from 2019 until 2029. The amended Bill also allows for, but does not require, an allocation to new entrants or growth in emissions by incumbent firms within an overall allocation cap.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Use of auction revenue	Not specified (auctioning was limited).	To be determined. Draft proposal suggests the proceeds from the auctioning of allowances could be used to: • reduce emissions • adapt to the impacts of climate change • fund research and development • further develop renewable energies to meet the EU's commitment to using 20% renewable energies by 2020 • fund carbon capture and storage • contribute to the Global Energy Efficiency and Renewable Energy Fund • fund measures to avoid deforestation and facilitate adaptation in developing countries • address social aspects such as possible increases in electricity prices in lower and middle income households Proceeds should also be used to cover costs associated with scheme administration. Provision should be included for monitoring the use of funds from auctioning for these purposes.	Not specified.
Treatment of households	Not covered by the directive.	To be determined. Draft proposal suggests that a portion of revenue should be allocated to addressing social aspects, such as possible increases in electricity prices in lower and middle income households.	The Government is looking at options to help households transition to a low-emissions energy system. The Government will put in place programs to reduce the financial impacts of higher electricity prices on low- and modest-income households, while ensuring incentives to adopt energy-efficient options remain.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Mechanisms for EITE assistance	Free allocation.	Energy-intensive industries which are determined to be exposed to significant risk of carbon leakage could receive up to 100% of allowances free of charge or an effective carbon equalisation system could be introduced. Such a system could apply requirements to importers that would be no less favourable than those applicable to installations within the EU, for example by requiring the surrender of allowances.	NZUs allocated free of charge to eligible parties. Phase-out of assistance by 2025. The initial level of assistance to eligible trade-exposed industrial firms is 90% of their 2005 emissions from direct use of coal, natural gas or geothermal stream direct consumption of electricity and non-energy industrial processes. The initial level of assistance to agricultural firms is 90% of their 2005 emissions of methane and nitrous oxide from eligible activities.
Eligibility for assistance—new and existing EITEs	If the Commission decides that the installations will: • as a result of national policies, limit their emissions as much as would be the case if they were subject to the provisions of this Directive • be subject to monitoring, reporting and verification requirements • be subject to penalties at least equivalent to those in the case of non-fulfilment of national requirements, it shall provide for the temporary exclusion of those installations from the Community scheme. It must be ensured that there will be no distortion of the internal market.	Commission will identify by 30 June 2010 which energy intensive sectors or subsectors are likely to be subject to carbon leakage. Those sectors may be exempt from the move to phase out free allocations from 2013.	Companies may qualify as trade exposed if they face foreign competition, are exposed to higher emissions costs than their overseas competitors and are unable to pass on some or all of their emissions costs due to competition.

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Use of benchmarks for EITEs		To avoid distortions of competition, the transitional free allocation should be based on harmonised Community-wide rules. Those rules should take account of the most GHG emissions and energy efficient techniques, substitutes, alternative production processes, use of biomass and GHG emissions capture and storage. Any such rules must avoid perverse incentives to increase emissions.	
Assistance to strongly affected industries	Free allocation to electricity generators. Member states may apply to the Commission for installations to be temporarily excluded until 31 December 2007.	Assistance to the aviation sector.	Design features of the scheme that will moderate its impact on firms include: • free allocation • delayed entry. The aim is to preserve sufficient pressure for behavioural change, while enabling firms to make a smooth transition to lower emissions.
Governance arrangements / independent scheme regulator	Member states to make the appropriate administrative arrangements, including the designation of the appropriate competent authority or authorities, for the implementation of the rules of this Directive. A central administrator also designated by the Commission, to maintain an independent transaction log recording the issue, transfer and cancellation of allowances.	In order to ensure that allowances can be transferred between persons within the Community without any restriction, and to ensure that the Community scheme can be linked to emissions trading systems in third countries and sub-federal and regional entities, from January 2013 onwards, all allowances should be held in the Community registry established under Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004. This should be without prejudice to the maintenance of national registries for emissions not covered by the Community scheme.	The administration role of the NZ ETS established by the Ministry of Economic Development will be reviewed by the accountable chief executives within three years of establishment (December 2010).

Design feature	European Union Emissions Trading Scheme (EU ETS), Phases I & II (2005–2012)	European Union Emissions Trading Scheme (EU ETS), Phase III (2013–2020)	New Zealand Emissions Trading Scheme (NZ ETS)
Complementary measures	Encourage the use of more energy-efficient technologies, including combined heat and power technology, producing less emissions per unit of output. Specifically promote combined heat and power technology. Member states shall endeavour to support capacity-building activities in developing countries and countries with economies in transition.	Complementary measures include: • 20% of energy from renewable sources by 2020 • increase energy efficiency by 20% by 2020.	Target for renewable electricity generation of 90% by 2025. Additional emphasis on: • switching from using coal to using gas or biomass for industrial heat wherever possible • increasing the use of cogeneration in conjunction with industrial heat production (cogeneration technology allows heat that is generated for industrial processes to be used to produce electricity as well).

B. List of consulted parties

ABN AMRO
Accenture
Adelaide Brighton Cement
AgForce Queensland
AGL Energy
Agricultural Alliance on Climate Change
Alcoa Australia
Allens Consulting Group
Allianz Australia
Alumina Limited
Amcor
AMP Capital Investors
ANZ
APIS Consulting Group
Asia–Pacific Emissions Trading Forum
Association of Super Funds Australia
Australasian (Iron & Steel) Slag Association
Australasian Railway Association
Australia Pacific Exchange Limited
Australian Airport Association
Australian Aluminium Council
Australian Automobile Association
Australian Bankers Association
Australian Chamber of Commerce & Industry
Australian Climate Exchange
Australian Coal Association
Australian Conservation Foundation
Australian Consumers' Association
Australian Contractor Association
Australian Council of Social Services
Australian Council of Super Investors
Australian Council of Trade Unions
Australian Dairy Farmers

Australian Energy Market Commission
Australian Energy Regulator
Australian Farm Institute
Australian Financial Markets Association
Australian Forest Growers
Australian Industry Greenhouse Network
Australian Industry Group
Australian Institute of Petroleum
Australian Manufacturing Workers Union
Australian National University
Australian Paint Manufacturers Federation
Australian Paper
Australian Petroleum Production & Exploration Association
Australian Pipeline Industry Association
Australian Plantation Products & Paper Industry Council
Australian Rail Association
Australian Stock Exchange
Australian Shipowners Association
Australian Sugar Milling Council
Australian Trucking Association
Australian Uranium Association
Australian Workers Union
Australian Youth Climate Coalition
Babcock & Brown
Baker & McKenzie
BHP Billiton
Biofuels Association of Australia
Bluescope Steel
Boral
BP Australia
Broadcast Australia
Brotherhood of St Laurence
Bureau of Steel Manufacturers Ltd
Business Council of Australia
Caltex Australia
Carbon Conscious
Carbon Markets
Catholic Services Australia
Cattle Council of Australia
Cement Industry Federation

Centennial Coal
Centre for Aboriginal Independence & Enterprise
Certified Practising Accountants Australia
Chevron
CHOICE
Clean Energy Council
Climate Action Network Australia
Climate Institute
Commonwealth Bank
Commonwealth Scientific and Industrial Research Organisation
Construction Forestry Mining Energy Union
Cool NRG
Corporate Tax Association
CSR
Department for Environment, Food and Rural Affairs, United Kingdom
Deutsche Bank
Earthscan
EcoFutures Pty Ltd
Electrolux
ELGAS
Emirates Airline
Energy Developments Ltd
Energy Networks Association
Energy Retailers Association of Australia
Energy Supply Association of Australia
Energy Users Association of Australia
Environment Business Australia
Ernst & Young
Exigency (Australasian Climate Exchange)
ExxonMobil Australia
Federal Chamber of Automotive Industries
Finance Industry Council of Australia
Financial and Energy Exchange
Future Fund
Garnaut Review
Geodynamics
Goldman Sachs JBWere
Government Relations Australia
Grain Growers Association
Green Building Council

Green Cooling Council
Green Institute
Greening Australia
Griffin Energy
Hawker Britton
Iberdrola
Incitec Pivot
Independent Pricing and Regulatory Tribunal of New South Wales
Institute of Chartered Accountants
Insurance Australia Group Limited
Insurance Council of Australia
Insurance Group Australia
International Power
Investment & Financial Services Association
Investors Group for Climate Change
JP Morgan
KPMG
Law Council of Australia
Leighton Holdings
LEK Consulting
Lend Lease
Logica CMG
Macquarie Bank
Macquarie Capital
Meat and Livestock Australia
Mercer Investment Consulting
Merrill Lynch
Message Stick Carbon Group
Minerals Council of Australia
Mizuho Information and Research Institute, Japan
Monash Energy
Monash University
National Association of Forest Industries
National Association of Testing Authorities
National Australia Bank
National Environment Registry
National Farmers' Federation
National Generators Forum
National Institute of Accountants
National Lime Association of Australia

National Union of Workers
National Welfare Rights
NEMMCO
NERA Economic Consulting
New South Wales Department of Primary Industries
New South Wales Farmers Federation
New Zealand Treasury
Norske Skog
OneSteel
Origin Energy
Pacific National (Asciano)
Parker and Partners
Peabody Pacific
Petratherm
Plastics and Chemicals Industries Association
PricewaterhouseCoopers
Property Council of Australia
Qantas
Qenos
Queensland Farmers Federation
Queensland Gas
Queensland Rail
Refrigerants Australia
Regional Aviation Association of Australia
Reserve Bank of Australia
Rio Tinto
RMIT University
Roaring 40s
Saint Vincent De Paul
Santos
Shaw Contracting Pty. Ltd.
Shell
South Australian Farmers Federation
South West Group (City of Cockburn)
Stanwell Corporation
Synergy
Synthetic Greenhouse Gas Industries
Taxation Institute of Australia
Telstra
The Oil Mallee Company of Australia

Thiess
Toll Group
Tourism & Transport Forum
Treefarm Investment Managers Australia
TRU Energy
UBS
University of Canberra
University of Melbourne
URS
Verve Energy
VicSuper
Victorian Department of Primary Industries
Victorian Farmers Federation
Virgin Blue
Western Australian Forest Products Commission
Waste Management Association New South Wales
Waste Management Association of Australia
Waste Management Brisbane
Westpac
Woodside Petroleum
World Wildlife Fund – Australia
Xstrata Australia

C. National registry

Australia's national registry will play two important roles—it will help Australia meet its obligations under the Kyoto Protocol, and it will underpin the operation of the Carbon Pollution Reduction Scheme.

Under the Kyoto Protocol, Australia is obliged to have a registry to hold and manage Australia's Kyoto units (assigned amount units, removal units, emission reduction units and certified emission reductions). The Australian Government will manage Australia's allocation of Kyoto units through a national holding account in the registry and, at the end of the Kyoto commitment period, surrender sufficient Kyoto units to match Australia's obligations under the Kyoto Protocol (that is, 108 per cent of 1990 emissions).

The registry will also hold, and track ownership of, all carbon pollution permits. Development of the registry will need to be completed before the first auction of permits to enable permits to be held in accounts in the registry.

The registry will be administered by the regulator. It will underpin the operation of the Carbon Pollution Reduction Scheme through tracking the ownership, and managing the surrender and cancellation, of eligible compliance permits (eligible compliance permits are listed in Chapter 5). A range of entities will use the registry to hold, transfer, surrender and view public information, including:

- liable entities
- brokers
- the public.

Access to the registry will be via an online interface. Entities will be able to use the registry to perform a number of functions under the scheme, including:

- opening an account to participate in the emissions trading market
- receiving permits purchased at primary auctions or via free allocation
- registering permits and Kyoto units acquired on the secondary market
- surrendering eligible compliance permits where they have obligations to do so under the scheme
- voluntarily surrender eligible compliance permits.

C.1 Registration

In order to hold a permit or a Kyoto unit, entities and individuals will need to open an account in the registry. In line with the discussion in Chapter 3, the preferred position is that the registry would be open to all entities and individuals (subject to verification of identity and measures to prevent criminal activity), regardless of whether they have obligations under the scheme. A permit could be held and traded by any legal or natural person, subject to verification of identity and measures to prevent criminal activity. Entities that have obligations under the scheme will be obliged open an account in the registry in order to acquire and surrender eligible compliance permits under the scheme.

C.2 Transaction of permits

As discussed in Chapter 13, the scheme regulator will issue all carbon pollution permits created under the scheme. Some of these permits will be auctioned and, in limited cases, allocated to entities (see Chapter 7), with the registry recording the ownership of the permits. Once permits have been acquired by an entity (via auction or allocation), permit holders will be free to hold or sell permits to other registered users, with the registry tracking the ownership of those permits. Each permit will be held in a registry account and identified by a unique identification number.

The registry will keep a record of all transactions and eligible compliance permit holdings of each registered entity. In this sense, the registry will be the ultimate source of proof of ownership of permits under the scheme. The permits will be transferred electronically between account holders.

While the registry will act as a delivery mechanism for the transfer of permits, it will not facilitate payment or contracts for transfers, which will occur outside the registry. It is likely that equitable interests will be created in relation to eligible compliance permits but that the registry will not track or record them.

Registered users will also be able to transfer Kyoto units; that is, import them from international markets and sell them on domestic and international markets (see Chapter 6). Once the registry is connected to the United Nations Framework Convention on Climate Change international transaction log, expected by the end of 2008, the registry will be able to register Kyoto units.

The registry will have stringent security measures to mitigate against unauthorised access and security threats, for example.

C.3 Surrender of eligible compliance permits

Liable entities will be obliged under legislation to surrender one eligible compliance permit for each metric tonne of CO_2-e (carbon dioxide equivalent) of greenhouse gas emissions for which the entity is liable in a particular year. Once a permit has been surrendered in the registry it cannot be revived or reused under the scheme. An entity's

compliance with its obligations will be assessed by the regulator at a specified date following the completion of the compliance year (see Chapter 5).

Entities with obligations under the scheme will be able to surrender permits at any time during the year in order to comply with their obligations under the scheme. Quantitative and qualitative restrictions on the use of Kyoto units for compliance under the scheme are discussed in Chapter 6.

Entities and individuals will also be able to voluntarily surrender permits in the registry regardless of whether they have obligations under the scheme. If a permit is voluntarily surrendered by an entity or individual, the permit will be cancelled, thereby reducing the number of permits in the scheme.

In special circumstances the regulator may also extinguish permits as discussed in section 3.3.2.

C.4 Reporting and disclosure of information

The regulator, using information held in the registry, will be able to produce reports and supply aggregate-level information to the market.

One of the registry's main reporting functions will be to generate compliance reports, following the final date for surrender of permits, for a given commitment period. They will indicate to the regulator which entities have surrendered the correct number of permits and which have a shortfall or have surrendered an excess of permits.

The registry will be able to generate aggregates, such as total permits issued, total holdings, banking, borrowing and level of compliance, as well as similar reports for disaggregated data. Scheme emissions aggregates (total emissions, banking, borrowing, auction issuance) would be published annually (see Chapter 3).

Certain information will also need to be made public as part of Australia's international obligations.

As part of these obligations, Australia is required to report annually on Kyoto unit and Kyoto account information (as listed in Decision 13/CMP.1 of the Conference of the Parties to the Kyoto Protocol). These reports will be generated by the registry.

Examples of relevant information for each Kyoto-related account in the registry include account name, account type and commitment period; the total quantity of Kyoto units at the beginning of the year; the total quantity of Kyoto units acquired from other registries and the identity of the transferring accounts and registries; and the total quantity of Kyoto units transferred to other registries and the identity of the acquiring accounts and registries.

C.5 System linkages

The registry will form part of a number of linked systems that will support emissions trading.

The registry's functions will be limited to the management of eligible compliance permits. However, it will need to link to, and interact with, other systems to ensure that the scheme operates smoothly.

Internationally, the registry will need to link to the international transaction log, which facilitates the international trade of Kyoto units with other national registries and ensures that each transaction is consistent with the rules agreed under the Kyoto Protocol. The registry may also link directly with other non-Kyoto emissions trading scheme registries in the future, if the Government decides to link with other schemes (see Chapter 6 on international linking).

Domestically, it is likely that the registry will link to a number of systems to facilitate emissions trading. The most important links will be with emissions reporting systems, including the Online System for Comprehensive Activity Reporting. Other systems to which the registry may link include auctioning systems, the regulator's support systems (for example, customer relationship management systems and case management systems), financial market systems, and other Government systems.

D. Analysis of the emissions intensity of Australian industries

The following table is based on analysis conducted by the Centre for Integrated Sustainability Analysis (CISA), University of Sydney using the Australian Bureau of Statistics' (ABS) Australian National Accounts Input-Output Tables 2001–02, the National Greenhouse Gas Inventory 2002 and various industry-specific sources. The data includes all national emissions, other than those from deforestation.

The analysis illustrates the emissions attributed to 115 industry sectors. The emissions per unit of revenue for each industry is calculated as the direct and indirect electricity emissions associated with each industry per million dollars of revenue.

The classification of industry sectors is based on the 109 sectors in the National Accounts Input-Output tables. Four of these industry sectors have been further disaggregated. These sectors were gauged to be likely to show considerable variation in emissions intensity and some economic and emissions information on these sub-sectors was available. The Government recognises that amongst the other input-output sectors there are sub-sectors which will have higher emissions intensity than the sector average. Further disaggregation of other sectors was compromised due to the limitations on available data.

As outlined in Chapter 9, a key objective of stakeholder consultations following the release of the green paper will be to further the Government's understanding of the relative emissions intensities of different activities.

The further disaggregated sectors are:

- Basic non-ferrous metals and products (industry code 2702) disaggregated into three sub-sectors:
  - Aluminium
  - Alumina
  - Other non-ferrous metals and products.
- Cement, lime and concrete slurry (industry code 2603) disaggregated into two sub-sectors:
  - Cement and lime
  - Ready-mix concrete.
- Coal (industry code 1101) disaggregated into two sub-sectors:
  - Black coal
  - Brown coal.

- Other agriculture (industry code 0107) disaggregated into three sub-sectors:
  - Other agriculture not elsewhere classified (nec)
  - Sugar cane
  - Cotton.

The data in this table provide a 'snapshot' of the economy and emissions in 2001–02. Change in emissions, production and commodity price data since 2001–02 may have significantly affected some of these data and the relative emissions-intensity ranking of the industry sectors. These data do not show projected changes in economic behaviour or emissions if a carbon cost is introduced.

These intensities are calculated under a basic prices valuation in terms of final demand and are provided for the comparison of sectoral performance. They are not applicable to carbon footprinting of companies, projects, investment funds and portfolios, households or consumers. This analysis was conducted prior to the release (in June 2008) of 2004–05 input-output tables.

The total emissions listed in the table do not tally to 100 per cent of national emissions as the table does not include emissions attributed to the residential sector.

	Industry code	Industry Sector (As classified in the ABS Australian National Accounts Input-Output Tables)	Emissions per unit of revenue (t CO_2-e/$m revenue)	Proportion of National Emissions (excluding deforestation)
1	3601	Electricity supply	9,945	5.0%
2	2702*	Aluminium	7,357	6.1%
3	0103	Beef cattle	6,687	11.2%
4	2603*	Cement and lime	4,720	1.4%
5	0101	Sheep	3,513	3.4%
6	0104	Dairy cattle	3,240	2.7%
7	0105	Pigs	1,958	0.4%
8	1101*	Black Coal	1,722	5.0%
9	2602	Ceramic products	1,675	0.4%
10	2702*	Alumina	1,649	2.8%
11	3602	Gas supply	1,578	0.8%
12	2701	Iron and steel	1,568	3.9%
13	2502	Basic chemicals	1,288	2.0%
14	2605	Other non-metallic mineral products	1,260	0.3%
15	1201	Oil and gas	1,186	3.7%
16	2303	Pulp, paper and paperboard	1,133	0.5%
17	1400	Other mining	1,123	0.5%
18	9601	Other services (includes sanitary and garbage disposal)	1,101	3.3%

	Industry code	Industry Sector (As classified in the ABS Australian National Accounts Input-Output Tables)	Emissions per unit of revenue (t CO_2-e/$m revenue)	Proportion of National Emissions (excluding deforestation)
19	0107*	Sugar Cane	1,054	0.2%
20	6101	Road transport	1,026	5.3%
21	1101*	Brown Coal	962	0.1%
22	2603*	Ready-mixed concrete	818	0.4%
23	0106	Poultry	792	0.3%
24	2601	Glass and glass products	645	0.2%
25	2702*	Other non-ferrous metals and products	628	1.6%
26	6301	Water transport	624	0.4%
27	3701	Water supply, sewerage and drainage services	573	0.9%
28	1302	Non-ferrous metal ores	571	1.5%
29	2501	Petroleum and coal products	542	1.5%
30	0102	Grains	523	1.1%
31	0107*	Cotton	494	0.1%
32	6401	Air and space transport	384	1.0%
33	6201	Rail, pipeline and other transport	380	0.7%
34	400	Commercial fishing	348	0.2%
35	0107*	Other agriculture n.e.c	341	0.6%
36	2108	Other food products	284	0.7%
37	2505	Soap and detergents	279	0.1%
38	2301	Sawmill products	254	0.1%
39	1301	Iron ores	249	0.2%
40	2507	Other chemical products	220	0.1%
41	2302	Other wood products	212	0.2%
42	2202	Textile products	209	0.1%
43	2304	Paper containers and products	201	0.2%
44	5103	Other retail repairs	198	0.1%
45	2604	Plaster and other concrete products	197	0.1%
46	2203	Knitting mill products	165	<0.1%
47	2808	Other electrical equipment	163	0.1%
48	5701	Accommodation, cafes and restaurants	142	1.1%
49	2105	Flour mill products and cereal foods	142	0.1%
50	2506	Cosmetics and toiletry preparations	134	<0.1%
51	2101	Meat and meat products	132	0.4%
52	4503	Other wholesale repairs	132	0.2%

	Industry code	Industry Sector (As classified in the ABS Australian National Accounts Input-Output Tables)	Emissions per unit of revenue (t CO_2-e/$m revenue)	Proportion of National Emissions (excluding deforestation)
53	8401	Education	130	1.1%
54	2705	Fabricated metal products	128	0.2%
55	4502	Wholesale mechanical repairs	124	<0.1%
56	2110	Beer and malt	124	0.1%
57	2806	Electronic equipment	124	0.1%
58	2201	Textile fibres, yarns and woven fabrics	122	0.1%
59	5102	Retail mechanical repairs	115	0.4%
60	8201	Defence	107	0.3%
61	2104	Oils and fats	105	<0.1%
62	8701	Community services	99	0.2%
63	9301	Sport, gambling and recreational services	99	0.3%
64	2102	Dairy products	93	0.2%
65	2704	Sheet metal products	89	0.1%
66	2401	Printing and services to printing	88	0.2%
67	7803	Other business services	87	0.7%
68	2106	Bakery products	86	0.1%
69	2103	Fruit and vegetable products	86	0.1%
70	2509	Plastic products	80	0.1%
71	2107	Confectionery	79	<0.1%
72	9501	Personal services	78	0.1%
73	2206	Leather and leather products	74	<0.1%
74	7802	Legal, accounting, marketing and business management services	71	0.8%
75	8101	Government administration	70	0.6%
76	2504	Medicinal and pharmaceutical products, pesticides	69	0.1%
77	2810	Other machinery and equipment	69	0.1%
78	9101	Motion picture, radio and television services	66	0.1%
79	7101	Communication services	64	0.5%
80	2809	Agricultural, mining, etc. machinery	64	0.1%
81	1500	Services to mining	57	0.1%
82	2109	Soft drinks, cordials and syrups	56	<0.1%
83	2205	Footwear	56	<0.1%
84	9201	Libraries, museums and the arts	55	0.1%

	Industry code	Industry Sector (As classified in the ABS Australian National Accounts Input-Output Tables)	Emissions per unit of revenue (t CO_2-e/$m revenue)	Proportion of National Emissions (excluding deforestation)
85	7801	Scientific research, technical and computer services	54	0.4%
86	2703	Structural metal products	54	0.1%
87	5101	Retail trade	53	0.8%
88	2503	Paints	52	<0.1%
89	2801	Motor vehicles and parts, other transport equipment	51	0.2%
90	2508	Rubber products	45	<0.1%
91	2204	Clothing	42	<0.1%
92	8601	Health services	41	0.4%
93	0200	Services to agriculture, hunting and trapping	39	<0.1%
94	4501	Wholesale trade	38	0.6%
95	7702	Other property services	37	0.4%
96	2807	Household appliances	34	<0.1%
97	2113	Wine, spirits and tobacco products	34	<0.1%
98	4101	Residential building	33	0.2%
99	2803	Railway equipment	31	<0.1%
100	2804	Aircraft	30	<0.1%
101	2402	Publishing, recorded media, etc.	25	0.1%
102	2802	Ships and boats	25	<0.1%
103	2805	Photographic and scientific equipment	22	<0.1%
104	4102	Other construction	21	0.2%
105	6601	Services to transport, storage	17	0.1%
106	2902	Furniture	13	<0.1%
107	7401	Insurance	10	<0.1%
108	2903	Other manufacturing	9	<0.1%
109	2901	Prefabricated buildings	6	<0.1%
110	7701	Ownership of dwellings	3	0.1%
111	7301	Banking	2	<0.1%
112	7302	Non-bank finance	1	<0.1%
113	7501	Services to finance, investment and insurance	1	<0.1%
114	4201	Construction trade services	1	<0.1%
115	0300	Forestry and logging	-1,493#	-0.5%

* denotes input-output industry sectors which have been disaggregated.

\# The emissions intensity for Forestry and logging is negative because it includes carbon sequestration in forests. The precise value of forest carbon will depend on the detailed scheme design rules.

Glossary

Abatement	Reduction of greenhouse gas emissions, or enhancement of greenhouse gas removal from the atmosphere by sinks.
Adaptation	Adjustment in natural or human social or economic systems in response to actual or expected climate change that moderates harm or exploits beneficial opportunities.
Additionality	A requirement that a project or activity provide abatement that is additional to any that would occur in the absence of the project or activity.
Afforestation	Planting of new forests on lands not recently forested.
Allocation	Distribution of permits.
Allocative efficiency	Allocative efficiency refers to the market's capacity to channel resources—in this case, permits—to their highest value uses across the economy and through time at low cost and minimal risk.
Annex I Party	Under the terms of the United Nations Framework Convention on Climate Change, Annex I countries include all developed countries and the countries in transition in central and eastern Europe, including Russia and Ukraine.
Annex B Party	Annex B of the Kyoto Protocol lists those developed countries that have agreed to a commitment to limit their greenhouse gas emissions in the period 2008–12.
Assigned Amount Unit	A Kyoto unit corresponding to one metric tonne of carbon dioxide equivalent emissions, and issued up to the level of a Kyoto party's assigned amount. The assigned amount is equal to a Kyoto party's 1990 emissions, multiplied by its target (expressed as a percentage), multiplied by five.
Auctioning	A method of allocating units in which government releases units into the market through an auction process.

Australian emissions unit	A unit corresponding to one metric tonne of carbon dioxide equivalent emissions and issued by the regulator of the emissions trading scheme. A liable entity will be required to surrender one pollution permit or eligible Kyoto unit for each tonne of covered emissions that the entity releases to the atmosphere.
Australia's National Greenhouse Accounts	A comprehensive set of reports outlining Australia's greenhouse gas emissions - as a nation, by state, and by industry. Further information is available at: http://www.greenhouse.gov.au/inventory/
Banking	The ability of hold permits created in one compliance period for use in a future compliance period.
Baseline	A projected level of future emissions against which reductions by project activities could be determined, or the emissions that would occur without policy intervention. See also 'emissions intensity baseline'.
Benchmarking	A system of allocating permits based on an individual firm's emissions performance against a sector- or industry-wide yardstick. The yardstick can be forward-looking (that is, a target) or based on historical performance. Typical benchmarks could include emissions per unit of output, value add or other relevant unit of measurement.
Bilateral (two way) linking	Arrangement whereby two governments agree to accept units from each other's schemes for compliance purposes.
Biosequestration	The removal of atmospheric carbon dioxide through biological processes, for example, photosynthesis in plants and trees.
Border adjustments	Adjustments made to the prices of traded products to remove the carbon price from exported goods and add a carbon price to imported goods.
Borrowing	The use of permits created for a future compliance period to meet current obligations under the scheme. Borrowing can be short term (borrowing only from the subsequent year) or long term (borrowing two or more years in advance).

Bunker fuels	Fuels used for international aviation and marine transport.
Business as usual	An estimate of the future pattern of greenhouse gas emissions, which assumes that there will be no major changes in attitudes and priorities of governments, business and the community.
Cap	See 'scheme cap'.
'Cap and trade' scheme	An emissions trading regime in which a limit (or cap) is placed on the total emissions allowable from the activities or sectors covered under the scheme. Tradeable emissions units are issued up to an amount equal to the cap.
Carbon Capture and Storage (CCS)	Technology to capture and store greenhouse gas emissions from energy production or industrial processes. Captured greenhouse gases have the potential to be stored in a variety of geological sites.
Carbon	Carbon is used in the report to generally refer to the six major greenhouse gases.
Carbon budget	The total allowable emissions under the scheme over some set number of years. That is, the sum of the scheme caps for that period.
Carbon cost	See 'carbon price'.
Carbon dioxide (CO_2)	A naturally occurring gas; it is also a by-product of burning fossil fuels and biomass, other industrial processes and land-use changes. It is the principal anthropogenic greenhouse gas that affects the earth's temperature.
Carbon dioxide equivalent (CO_2-e)	A standard measure that takes account of the different global warming potentials of greenhouse gases and expresses the cumulative effect in a common unit.
Carbon footprint	A measure of the greenhouse gas emissions attributable to an activity; it is commonly used at an individual, household or business level.
Carbon intensity	See 'emissions intensity'.

Carbon leakage	The effect when a firm facing increased costs in one country due to an emissions price chooses to reduce, close or relocate production to a country with less stringent climate change policies.
Carbon market	A generic term for a trading system in which countries, organisations and individuals buy or sell units of greenhouse gas emissions in an effort to meet limits on emissions.
Carbon offset	Carbon offsets represent reductions in greenhouse gases relative to a business-as-usual baseline. Carbon offsets are tradeable and often used to negate (or offset) all or part of another entities emissions.
Carbon price	The cost of emitting carbon into the atmosphere. It can be a tax imposed by government, the outcome of an emission trading market or a hybrid of taxes and permit prices. The various ways of creating a carbon price can have different effects on the economy. Also referred to as the cost of carbon emissions.
Carbon price path	See 'forward price curve'.
Carbon sequestration	The long-term storage of carbon dioxide in the forests, soils, oceans or underground in depleted oil and gas reservoirs, coal seams and saline aquifers. Examples include: the separation and disposal of carbon dioxide from flue gases or processing fossil fuels to produce hydrogen and carbon-rich fractions; and the direct removal of carbon dioxide from the atmosphere through land-use change, reforestation and agricultural practices to enhance soil carbon.
Carbon sinks	Natural or man-made systems that absorb and store carbon dioxide from the atmosphere, including trees, plants and the oceans.
Carbon tax	A surcharge on the carbon content of products.

Chlorofluorocarbons (CFCs)	Greenhouse gases covered under the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer and used for refrigeration, air-conditioning, packaging, insulation, solvents or aerosol propellants. Since they are not destroyed in the lower atmosphere, CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds, including hydrochlorofluorocarbons and hydrofluorocarbons, which are greenhouse gases covered under the Kyoto Protocol.
Certified Emission Reduction	A Kyoto unit corresponding to one metric tonne of carbon dioxide equivalent emissions, and issued for verified emission reductions or removals achieved by projects approved under the Clean Development Mechanism.
Clean Development Mechanism (CDM)	A mechanism under the Kyoto Protocol through which developed countries may undertake greenhouse gas emissions reduction or removal projects in developing countries, and receive credits for doing so, which they may apply towards meeting their mandatory emissions targets. See 'Kyoto mechanisms'.
Climate change	As defined by the UNFCCC, a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability over comparable time periods.
Cogeneration	The production of two useful forms of energy such as high temperature heat (for hot water or space heating) and electricity from the same process. Also known as combined heat and power.
Commitment period	Generally refers to the time frame in which Kyoto Protocol parties are required to meet their emissions reduction obligations. The Protocol's first commitment period is from 2008 to 2012.
Compliance period	A recurrent period (for example a financial year) over which emissions must be monitored to determine entities' obligations under the scheme.
Coverage	The scope of an emissions trading scheme. Covered sectors are liable for their emissions under the scheme.

Covered emissions	Emissions that are covered by the emissions trading scheme and attract an obligation to surrender an Australian emissions unit or eligible Kyoto unit.
Customs duty	An entity required under the *Customs Tariff Act 1995* to pay customs duty (equivalent to fuel excise).
Deforestation	The conversion of forested land to an alternative, non-forest use.
Direct Emissions	Direct emissions are produced from sources within the boundary of an organisation, such as industrial processes.
Direct obligation (also indirect obligation):	An entity's obligation to surrender permits for its own greenhouse gas emissions (where these have not been accounted for elsewhere in the supply chain, for example upstream). An indirect obligation is where an entity is obliged to surrender units for emissions upstream or downstream of itself.
Downstream	A point in the supply chain below the direct source of emissions. For example, food processors, such as abattoirs, dairies and mills, are said to be 'downstream' from the farm, which is the source of emissions.
Early Action Credits	Credits allocated in recognition of abatement undertake prior to the commencement of the scheme.
Early crediting	An allocation of permits in recognition of abatement undertaken prior to the commencement of the scheme.
Electricity intensity	The ratio of electricity to output.
Emissions	The release of greenhouse gases into the atmosphere.
Emissions cap	See 'scheme cap'.
Emissions intensity	The ratio of emissions to output.
Emissions intensity baseline	A measure of the level of emissions per a specified unit of output at a point in time used to calculate assistance.
Emissions-intensive, trade exposed industries	Industries that either are exporters or compete against imports (trade exposed) and produce significant emissions in their production of goods (emissions intensive).

Emissions reduction unit (ERU)	A Kyoto unit corresponding to one metric tonne of carbon dioxide equivalent emissions, and issued for emission reductions and removals generated from Joint Implementation projects.
Energy intensity	The ratio of energy consumption to output.
European Union Emissions Trading Scheme (EU ETS)	The scheme was launched on 1 January 2005 with an initial phase from 2005–07 to be followed by a second phase (2008–12). Key features include: emissions allowances are allocated on an annual basis to entities; and coverage includes large combustion installations from all sectors plus oil refineries, coke ovens, iron and steel, cement, lime, glass, ceramics, and pulp and paper.
Forward price curve	A forecast or estimate of what the future price of carbon permits will be at different points in the future.
Free allocation	A method of allocating units where government releases units directly to entities at no cost.
Fuel excise remitter	An entity required under the *Excise Tariff Act 1921* to pay excise on fuel manufactured or distributed throughout the economy.
Fuel switching	The substitution of one type of fuel for another, for example the use of natural gas instead of coal. Fuel switching changes the emissions intensity of energy production because all fuels have a different carbon-content.
Fugitive emissions	Greenhouse gases that are released in the course of oil and gas extraction and processing; through leaks from gas pipelines; and as waste methane from black coal mining.
Gateway	A potential range within which future scheme caps may be set under the scheme.
Geosequestration	The process of storing liquefied carbon dioxide in deep underground geological structures (see 'carbon sequestration').
Gigawatt (GW)	A unit of power equal to one billion watts.

Global warming potential	A system of multipliers devised to enable warming effects of different gases to be compared. For example, over the next 100 years, a gram of nitrous oxide in the atmosphere is currently estimated as having 310 times the warming effect as a gram of carbon dioxide.
Grandfathering	Grandfathering provides a free allocation of permits to existing emitters based on their historical emissions profile (either for a single year or a multi-year average).
Greenhouse effect	The trapping of heat by naturally occurring heat-retaining atmospheric gases (water vapour, carbon dioxide, nitrous oxide, methane and ozone) that keeps the earth about 30°C (60°F) warmer than if these gases did not exist.
Greenhouse gases (GHGs)	Gases that cause global warming and climate change. The major GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).
Government disposition	The Government has indicated a disposition towards policy positions where it does not have sufficient information to arrive at a preferred position (see 'preferred position').
Hydrochlorofluorocarbons (HCFCs)	Compounds containing hydrogen, chlorine, fluorine and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs.
Hydrofluorocarbons (HFCs)	Compounds containing only hydrogen, fluorine and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing.
Indicative national emissions trajectory	Broad guidance over the pathway of future national emissions.

Indirect emissions	Indirect emissions are emissions generated in the wider economy as a consequence of an organisation's activities (particularly from its demand for goods and services), but which are physically produced by the activities of another organisation. Example include electricity production, 'upstream' emissions generated in the production of goods purchased or processed by the entity and 'downstream' emissions associated with transporting and disposing of products sold by the entity.
Informational efficiency	See efficient price discovery.
Intensity targets	Policies that specify emissions reductions relative to productivity or economic output, for instance, tonnes of CO_2-e per million dollars GDP.
Intergovernmental Panel on Climate Change (IPCC)	Established in 1988, the IPCC surveys worldwide scientific and technical literature and publishes assessment reports that are widely recognised as the most credible existing sources of information on climate change. The IPCC also works on methodologies and responds to specific requests from the UNFCCC's decision-making bodies.
Joint Implementation	See 'Kyoto mechanisms'.
Kyoto flexibility mechanisms	Three processes established under the Kyoto Protocol to increase the flexibility and reduce the costs of making greenhouse gas emissions cuts. The mechanisms allow Parties to acquire Kyoto units from other countries and count them towards their emissions targets. The mechanisms include: • emissions trading, which allows Annex I countries to transfer Kyoto units and use them to meet their targets • the Clean Development Mechanism, which allows countries with an obligation to implement emission reduction projects in developing countries to receive a certified emissions reduction that can be used to meet their emissions target • Joint Implementation, which allows a country with an obligation to undertake an emissions reduction project in another country that has an obligation and use the emissions reduction unit towards meeting their emissions target.

Kyoto Protocol	An international treaty negotiated under the auspices of the UNFCCC. It entered into force in 2005. Among other things, the Protocol sets binding targets for the reduction of greenhouse gas emissions by individual developed countries to be met within the first commitment period of 2008–12.
Kyoto units	Any unit issued under the Kyoto Protocol, namely assigned amount units, emission reduction units, certified emission reductions, and removal units.
Land Use, Land-Use Change and Forestry (LULUCF)	A reporting category under the Kyoto Protocol comprising agriculture emissions (land-use), and emissions from deforestation (land-use change) and carbon sequestered through reforestation (forestry).
Landfill gas	Gas generated by the natural degradation and decomposition of solid waste by anaerobic micro-organisms in sanitary landfills.
Large direct emitters	Entities with facilities that emit 25,000 tonnes of carbon dioxide equivalent a year or more.
Leakage	See 'carbon leakage'.
Liable entity	An entity that has an obligation under the emissions trading scheme.
Liquid market	A market whose essential characteristic is that there are ready and willing buyers and sellers at all times.
Low-emissions technology	Technology which produces a product with minimal greenhouse gas emissions. The term is commonly used to refer to power generation technologies (such as renewable, nuclear and clean coal generation), but applies equally to other sectors including transport and agriculture.
Marginal cost of abatement	The cost of reducing emissions by one additional unit.

Market failure	A situation where the market is not able to provide an efficient level of production and consumption of goods and services, including natural resources or ecosystem services. In the climate change context, this means that while greenhouse gas emissions impose a cost on society through environmental degradation, this cost is not currently reflected in the price of goods and services. As a result, emissions will be greater than is desirable because individuals and businesses do not face the full cost of their consumption and production decisions.
Megawatt (MW)	A unit of power equal to one million watts.
Mitigation	A human intervention to reduce the sources of or enhance the sinks for greenhouse gases.
National Electricity Market (NEM)	Wholesale market for the supply of electricity to retailers and end-users in the interconnected regions of Queensland, NSW, the ACT, Victoria and South Australia. Began operating in December 1998. Tasmania joined in 2005.
National Greenhouse and Energy Reporting System (NGERS)	The National Greenhouse and Energy Reporting System is based on the *National Greenhouse and Energy Reporting Act 2007*, which was passed on 29 September 2007. The Act establishes a mandatory reporting system for corporate greenhouse gas emissions and energy production and consumption. The Act commences on 1 July 2008. Further information is available at: http://www.greenhouse.gov.au/reporting/index.html
Net out	To accurately calculate and exclude fuel supplied to large users. Netting-out arrangements are needed under the emissions trading scheme to fairly and efficiently allocate obligations for emissions from fuel combustion between fuel suppliers and large direct emitters (see 'large direct emitters').
Offsets	See 'carbon offsets'.
Perfluorocarbons (PFCs)	A group of artificial chemicals comprising only carbon and fluorine. These chemicals (predominantly CF_4 and C_2F_6) were introduced as alternatives, along with hydrofluorocarbons, to the ozone-depleting substances. PFCs are also emitted as by-products of industrial processes and are also used in manufacturing.

Point of obligation	The point in the supply chain where scheme obligations are applied. The point of obligation could be the facility that directly emits greenhouse gases or another point along the supply chain, upstream or downstream from the point of emissions. See also 'direct obligation' and 'indirect obligation'.
Preferred position	Preferred positions represent the Government's current thinking on key aspects of the architecture of the scheme. Preferred positions should not be interpreted as statements of the Government's final policy intent, but as preferences based on the available information.
Price cap	A price cap is a mechanism for setting the maximum cost of compliance under the scheme.
Price floor	A price floor is a mechanism for setting the minimum cost of compliance under the scheme.
Price signal	See 'carbon price'.
Primary market	The allocation of units by the Government.
Production leakage	The loss of economic activity from Australia to another country as a result of increases in costs caused by government intervention (for example, through a carbon cost).
Reforestation	Conversion of land used for purposes other than forestry to forested land.
Removal unit (RMU)	A Kyoto unit corresponding to one metric tonne of carbon dioxide, and issued for removals of carbon dioxide from the atmosphere by eligible land use, land-use change and forestry activities undertaken in a Kyoto party.
Rent seeking	A behaviour attributed to an individual, organisation or firm that seeks to make money by manipulating the economic environment rather than by making a profit through trade and production of wealth.
Safety valve	See 'price cap'.
Scheme Cap	A mandated restraint, in a scheduled time frame, that puts a 'ceiling' on the total amount of anthropogenic greenhouse gas emissions.

Secondary market	A generic term for a trading system in which countries or private organisations may buy or sell units of greenhouse gas emissions in an effort to meet their national limits on emissions following Government's allocation of units.
Sectoral agreement	Where countries enter into agreements targeted at a common sector among them. Actions and commitments under these agreements can vary, including imposing performance standards, absolute or intensity targets and technology finance mechanisms.
Sequestration	The removal of atmospheric carbon dioxide, either through biological processes (for example, photosynthesis in plants and trees), or geological processes (for example, storage of carbon dioxide in underground reservoirs).
Sinks	See 'carbon sinks'.
Sovereign risk	The risk borne by business caused by changes to government policy (that is, the risk associated with changing the 'rules of the game').
Spot market	A market in which goods (for example, permits) are sold for cash and delivered immediately. Contracts bought and sold on these markets are immediately effective.
Stationary energy emissions	Includes emissions from fuel consumption for electricity generation; fuels consumed in the manufacturing, construction and commercial sectors; and other sources such as domestic heating.
Sunk costs/investment	Costs that have already been incurred and that cannot be recovered to any significant degree.
Terms of trade	The ratio of the price of a country's exports to the price of its imports. The terms of trade are said to improve if that ratio rises.
Trade exposed	Industries that currently export or compete against imports, or which at feasible relative prices, would do so.
Trajectory	See 'indicative national emissions trajectory'.

True up	An option for the free allocation of emissions units where allocations are based on an entity's forecast production levels. The true-up would adjust the entity's allocation for the next period to take account of deviations between actual and projected output in the previous year.
True-up period	The period after the end of the Kyoto first commitment period, in which Parties can continue to undertaker transactions of Kyoto units. Before the end of the true-up period each Party with a commitment must retire units equal to or greater than its commitment.
UNFCCC	United Nations Framework Convention on Climate Change. An international treaty adopted after the Rio Earth Summit in 1992 and aimed at achieving the stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.
Unilateral linking	Arrangement whereby a government recognises units from another scheme but this recognition is not reciprocated.
Upstream	A point in the supply chain above the direct source of emissions. For example, obligations for emissions from fuel consumption may be placed on the fuel supplier, rather than the fuel user.
Vintage	The year to which the permit pertains.