

# AN AUSTRALIAN EMISSIONS TRADING SCHEME

# 14

## Key points

A principled approach to the design of the Australian emissions trading scheme is essential if the scheme is to avoid imposing unnecessary costs on Australians.

The integrity, efficiency and effectiveness of the scheme will require:

- establishment of an independent carbon bank with all the necessary powers to oversee the long-term stability of the scheme
- implementation of a transition period from 2010 to the conclusion of the Kyoto period (end 2012) involving fixed price permits
- credits to trade-exposed, emissions-intensive industries to address the failure of our trading partners to adopt similar policies
- no permits to be freely allocated
- no ceilings or floors on the price of permits (beyond the transition period)
- intertemporal use of permits with 'hoarding' and 'lending' from 2013
- a judicious and calibrated approach to linking with international schemes
- scheme coverage that is as broad as possible, within practical constraints

Seemingly small compromises will quickly erode the benefits that a well-designed emissions trading scheme can provide.

The existing, non-indexed shortfall penalty in the Mandatory Renewable Energy Target needs to remain unchanged in the expanded scheme.

It will be important for Australia to put in place, from 2010, the architecture to deliver emissions reductions at the lowest possible cost to the domestic economy. Great care must be taken now in the design of a domestic emissions trading scheme. This is the necessary centrepiece in Australia's effort to reduce emissions.

The public debate that has accompanied the release of the Review's draft documents and the Commonwealth Government's Green Paper on a Carbon Pollution Reduction Scheme has focused attention on the need for a highly principled approach to the design of the scheme.<sup>1</sup> If the necessary conditions of environmental effectiveness and economic efficiency cannot be satisfied in scheme design, this will raise costs by introducing new sources of uncertainty into business transactions. The net effect will be to distort economic activity and investment in new productive capacity in ways that will be damaging in the long term and potentially disastrous for emissions reductions as well as for economic efficiency.

This is no more evident than when designing the appropriate assistance arrangements for trade-exposed, emissions-intensive industries in a world of ad hoc mitigation policy. It would be a significant failure of public policy if such assistance arrangements sought to compensate businesses for the effect of an Australian emissions trading scheme rather than for the failure of our trading competitors to implement comparable policies.

There is a risk to the stability of the emissions trading scheme if the form of the post-Kyoto international agreement remains unknown in advance of the scheme's commencement. The time between the start of the domestic emissions trading scheme in 2010 and a successor international agreement from 2013 is best viewed as a transitional period requiring special consideration. This is a period covered by Australia's established commitments under the Kyoto protocol.

Table 14.3 at the end of this chapter provides an overview of the Review's preferred design for an Australian emissions trading scheme.

## 14.1 The framework to guide efficient scheme design

A principled approach is required if an emissions trading scheme is to be effective and efficient in supporting transition to a low-emissions economy. Successful implementation will result in observable outcomes, such as:

- low transaction costs
- price discoverability
- 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.

Conversely, a poorly designed scheme will compromise some or all of these outcomes; encourage and reward rent-seeking behaviour; delay at high cost the necessary structural adjustment; and raise the overall burden incurred by households.

### 14.1.1 The objective of an emissions trading scheme

To mitigate climate change effectively, a limit must be placed on rights to emit greenhouse gases to the atmosphere, and this must be reduced over time to the level that prevents any net accumulation in the atmosphere. Australia's limit will represent an agreed share of a global limit.

An emissions permit represents a tradable instrument with inherent value that can be exchanged between sellers and buyers in an emissions permit market. This enables the movement of permits about the economy to their highest value (or most economically efficient) use. It does this while ensuring the integrity of the volumetric control, or emissions limit, imposed in order to satisfy the policy objectives of climate change mitigation.

After the policy objective of reducing emissions is established and it has been determined that this is most efficiently achieved by the implementation of an emissions trading scheme, the objective of the scheme should be kept as simple and focused as possible in order to avoid compromising its efficiency, namely:

*To provide for the low-cost transmission of permits to the parties for whom they represent the greatest economic value.*

Other policy objectives—be they economic, environmental or social—should be pursued through alternative policy instruments that operate alongside the scheme.

### 14.1.2 Guiding principles for scheme design

The design of an emissions trading scheme is guided most appropriately and transparently by the following five principles.

#### Principle 1: Scarcity aligned with the emissions target

Market participants must have confidence that permits are in scarce supply and reflect the targets and trajectories for national emissions reductions discussed in Chapter 12. Where the scarcity of permits is uncertain, market participants will factor in risk premiums (if they suspect that the commodity will become more scarce) or risk discounts (if they suspect that the commodity will become more abundant). This will distort resource allocation decisions and impose unnecessarily high costs on the economy.

#### Principle 2: Credibility of institutions

Credibility, or faith in the enduring nature of the rules and institutions that define the emissions trading scheme, is essential for its ongoing success. Markets can quickly collapse if their credibility is shaken. This is all the more pertinent for markets that owe their existence solely to government decree.

As an emissions trading scheme exists entirely at the behest of government, market participants will be alert for any signs of shifts in policy, management protocols or operating procedures that may undermine the integrity of the market. A poorly designed scheme will also create incentives to press for change if there appears to be a chance that the rules of the scheme can be influenced by political pressure. Arbitrary changes to rules that benefit one party are likely to come at the expense of other market participants, or the community, or the environment.

Reliable, steady and transparent operating rules are a necessary condition for the credibility of the market. These rules may need to be adjusted over time. This too must be done through reliable, steady and transparent processes.

#### Principle 3: Simplicity of rules

Simplicity requires that rules for the scheme should be easily explained and implemented. Rules should apply consistently; and special rules, concessions and exemptions should be avoided. Rules should be unambiguous and internally

consistent. Where one rule necessitates the creation of another rule to ameliorate unwanted consequences, the first rule is probably suboptimal.

Compromises to the simplicity of the scheme should not be made lightly as they will inevitably result in increased uncertainty and transaction costs for market participants.

#### **Principle 4: Tradability of permits**

If market participants have no means by which to exchange permits, the scheme's objective, of moving emissions permits to those who value them most, cannot be achieved. Tradability requires that:

- permit characteristics and the benefits they bestow are unambiguous
- the terms and conditions of trade are commonly understood
- those wanting to participate have ready access to the market
- transactions can be secured at minimal cost
- offer and bid prices are transparently available.

#### **Principle 5: Integration with other markets**

An emissions trading scheme must be able to coexist and integrate with international markets for emissions entitlements as well as with other financial, commodity and product markets in the domestic and international economy. This requires that there be no barriers to the appropriate transmission of information within and between markets.

If the scheme contains distortions that result in an emissions permit price that does not reflect its true scarcity value, this mis-priced market will adversely affect decisions about resource allocation by investors in other markets.

The converse is also true. Distortions in other markets may result in mis-priced outcomes in the scheme. However, the integrity of the scheme should not be compromised to compensate for distortions in other markets. Rather, policy makers should use the opportunity and insights gained from establishing the scheme to identify and correct distortions in other markets.

## **14.2 Elemental design features**

This section applies the principles in order to guide the design of elemental features of the Australian emissions trading scheme. Because a comprehensive global agreement is the longer-term objective in taking mitigation action, a domestic emissions trading scheme should support Australia in moving toward this ultimate objective.

### 14.2.1 Establishing and changing the scheme's emissions limit

An emissions permit will enable the holder to emit, on a one-off basis, a specified quantity of greenhouse gas—one tonne of carbon dioxide equivalent (CO<sub>2</sub>-e). The emissions reduction trajectory will determine the number of permits that can be issued in any given period. The total number of permits that can be issued (for example, in accordance with an international agreement to reduce emissions, see Chapter 9) over time specifies the 'emissions budget' for all the sectors covered by the scheme. The integrity of the trajectory and the overall emissions budget is paramount in order to satisfy the scarcity principle.

In its early years, it will not be possible for the scheme to cover all emissions from all sectors. The limit on emissions from sectors covered by the scheme should be in accordance with the following calculus in any given compliance period:

$$\begin{array}{r}
 \text{Australia's total emissions allocation under international obligations} \\
 \textbf{equals} \\
 \text{Emissions from sectors covered by the emissions trading scheme} \\
 \textbf{less} \\
 \text{Emissions from sectors not covered by the scheme}^2 \\
 \textbf{plus} \\
 \text{Emissions entitlements purchased internationally}
 \end{array}$$

Maintaining the credibility of the scheme (Principle 2) will require that changes to the emissions limit under the scheme are kept to an absolute minimum. Where changes are necessary, they should be predictable and carried out in accordance with clearly articulated rules and transparent processes. The targets and trajectories framework of section 12.1 provides the basis for minimising market uncertainty by defining a limited set of possible trajectories (three) for Australia's total emissions entitlement.

To ensure predictability, the conditions that would lead to movement from one trajectory to another—namely, an international agreement—would be specified in advance. If and when it was announced that the conditions had been met for movement to a tighter trajectory, five years' notice would be given to the market. This would provide the market with five years of firm 'caps' at all times.

If international obligations required Australia to move to lower emissions within five years, the government (or scheme regulator, the independent carbon bank (see sections 14.4.2. and 14.7)) would meet this commitment by purchasing international emissions entitlements. This would cushion the effect on participants in the emissions trading scheme in the period between the commencement of the agreement and the end of the five-year notice period.

Information should also be provided with sufficient lead time to market participants about any other changes that would significantly affect the scheme's scarcity constraint. These changes could include: the inclusion of new sectors

or gases under the scheme; government purchases of international emissions entitlements; or changes to the rules about accepting international emissions entitlements to acquit domestic obligations. These issues are covered below in further detail.

### 14.2.2 Who will the scheme cover?

Coverage refers to the scope of the scheme in terms of the greenhouse gases and the sectors that come under the ambit of the scheme. Emitters of any of the six anthropogenic greenhouse gases covered by the Kyoto Protocol that contribute to climate change should have an obligation to acquit permits under the Australian emissions trading scheme.

Coverage of the scheme should be as broad as possible, within practical constraints, in order to:

- provide an incentive for emissions reductions in all sectors according to lowest-cost mitigation opportunities
- maximise market liquidity and stability
- distribute the costs of the scheme in ways that minimise distortions in resource allocation
- facilitate integration with other markets.

Sectors should be covered by the scheme unless the costs of inclusion are prohibitive due to:

- Lack of accurate estimation, measurement, monitoring and verification methodologies (see Box 14.1)—for some sectors, establishing the necessary processes may require some significant investment.
- Uncertainties in emissions measurement due to unreliable or inaccurate ways to monitor, measure or estimate, and verify emissions from operations in that sector—if a reliable proxy or ‘rule-of-thumb’ can be identified, then the sector should be included under the scheme. A poorly defined proxy can create distortions—failing to reward good performers and failing to penalise poor performers. Further, a major revision to the proxy introduced arbitrarily could cause significant market shock.
- Scale-related transaction costs—in some sectors large volumes of emissions come from relatively few sources (for example, electricity generators). In other sectors, there may be many small emitters. Even if emissions can be accurately measured, it may not be cost effective for all sources of emissions to take on an obligation under the scheme. Sectors comprising many small emitters may be more appropriately covered by imposing the obligation upstream or downstream rather than directly on the emitter (see ‘Point of obligation’ below)—provided this can be achieved cost effectively and with sufficient accuracy.

If a sector is not covered by the emissions trading scheme, policies should be developed to drive net emissions reductions from that sector, consistent with contributing to Australia’s overall emissions reduction goal.

### Domestic offsets from non-covered sectors

Australia's national emissions reduction commitments, as defined in Chapter 12, will relate to emissions from sectors included in the emissions trading scheme as well as those beyond the scheme's coverage.

Emissions reductions in non-covered sectors could be encouraged by recognising such reductions in the form of domestic offset credits. An offset credit could be created for each tonne of emissions removed by or reduced in non-covered sectors. It can be traded into the emissions trading scheme and would be treated as a substitute for a permit. An offset credit could be used by parties covered by the scheme to meet their obligations under the scheme. This enables lower-cost mitigation from offsets created outside the scheme to replace higher-cost mitigation options within the covered sectors.

This approach may be suitable for sectors in which emissions from some sources and activities, but not others, can be measured or estimated.

Importantly, to be eligible to create a credit, an offset project must provide an emissions reduction that is additional to that which would have occurred anyway. If it did not, allowing an offset credit to be created would undermine the overall domestic mitigation effort by introducing double counting.<sup>3</sup>

There may also be a role for international offsets in an Australian emissions trading scheme. This is discussed in section 14.4.3.

### Point of obligation

The point of obligation defines the liable party for surrendering permits under the emissions trading scheme. The point of obligation may be anywhere in the supply chain—from those who produce goods and services that involve the release of greenhouse gases to the atmosphere, to those who consume those products. It is most reasonably imposed at the point at which monitoring and reporting of emissions is most easily, accurately and cost effectively achieved (see Box 14.1).

A natural starting point when considering the point of obligation is the emissions source. However, an alternative point of obligation may be selected when there is evidence that transaction costs can be lowered significantly by doing so, or if accuracy of emissions measurement is higher or coverage would be substantially wider.

There is no need for the point of obligation to be harmonised across schemes in different countries. Each country should adopt the most effective arrangements under local conditions.

There have been suggestions that the Australian emissions trading scheme should base the legal obligation at the point of consumption. While this has some attraction, it is not feasible for two reasons. First, the information requirements to support a consumption-based approach would be prohibitively costly. Second, there are now a number of emissions trading schemes, actual and nascent, imposing production-based points of obligation. If a consumption-based scheme were to be established in Australia, it would be extraordinarily difficult to integrate Australia's scheme with those in other countries. The integration principle

highlighted in section 14.1.2 is essential in order to reduce the costs of mitigation in Australia.

### Strict compliance: penalties and make-good provisions

A financial penalty must apply if a party with an obligation under the scheme fails to surrender permits equal to its emissions during a given compliance period or for failing to repay permits loaned from an independent authority (the independent carbon bank, see sections 14.4.2 and 14.7). This is a punitive measure rather than an alternative form of compliance.

To ensure the integrity of the emissions limit and credibility of the scheme, financial penalties would need to be accompanied by a make-good provision applying to the non-compliant party. That is, payment of a financial penalty does not negate an extant obligation to acquit permits. The independent carbon bank should have the necessary powers to address repeated failure by a private party to make good its obligation.

#### Box 14.1 Emissions monitoring, reporting and verification

The emissions trading scheme will require parties covered by the scheme to monitor and report their emissions to the scheme regulator. The system used to collect this information must be transparent, credible and efficient.

In September 2007, the *National Greenhouse and Energy Reporting Act 2007* was introduced.<sup>4</sup> This legislation established a national greenhouse and energy reporting system that will underpin the emissions trading scheme. Firms registered under the Act will provide information on their greenhouse gas emissions, energy production and energy consumption to the Greenhouse and Energy Data Officer. Those required to report will be facilities with over 25 kilotonnes of emissions, or production/consumption of 100 terajoules or more of energy in a given year. Thresholds have also been set at corporation level, and are to be phased in progressively during the first three years of the reporting system.

The system was in place from 1 July 2008 and the first year of reporting will be the 2008–09 financial year.

Data from the national greenhouse and energy reporting system should be the basis for making assessments about parties' obligations under the emissions trading scheme. However, additional data may be required, for example, in order to net out emissions from an upstream party's obligation.

### Sector-specific issues

Australia's emissions can be classified as coming from the following sectors: stationary energy; transport; fugitive emissions from fuel production; industrial processes; waste; agriculture; and land use, land-use change and forestry.

Emissions from stationary energy, transport,<sup>5</sup> industrial processes and fugitive emissions from fuel production can be accurately measured or estimated at

reasonable cost and should be covered by an Australian emissions trading scheme commencing in 2010.

There is a reasonably strong, although not definitive, presumption that the source of emissions is the best point of obligation for stationary energy. The possibility of allowing large energy users to opt in to accept an obligation for their (indirect) stationary energy emissions should be considered. This would require the generator to have the ability to track and net out that energy use. The existence of a power purchase agreement may support this option.

Emissions from transport are released at a much smaller scale by individual vehicles. For the transport sector, then, an upstream point of obligation may be a cost-effective way to cover a large number of smaller emitters. Many parties that produce fuel for the Australian market are located overseas, beyond the coverage of an Australian emissions trading scheme, so petroleum could logically be covered by making the point of excise the point of obligation. Large liquid fuel users, for example, fleets or freight operators, might be allowed to opt in to accept an obligation under the scheme.

A complication will arise where the relationship between fuel and emissions is not constant. For example, sometimes petroleum is used as an input in manufacturing processes (such as for plastics or petrochemicals), resulting in the release of few or no emissions. Where this is the case, fuel sales would need to be netted out of an upstream party's obligation, or a credit system established so that producers could claim back the permit price passed through to their liquid fuel purchase.

The point of obligation can be set at the facility level for oil and gas production, gas processing and fugitive emissions from coal mining. There are measurement difficulties and site-specific variability with fugitive emissions from coal mining and oil and gas fields (DCC 2008a). Overcoming these issues, with a robust methodology to estimate emissions, should be a priority, although proxy measures could be used in the interim.

The point of obligation for pipeline system fugitive emissions could be placed on pipeline systems, as defined by operational control of the physical infrastructure, such as pipes, valves and compressor stations. Generally, industrial process emissions can be measured or estimated at their source.

Emissions from waste—primarily methane emissions from organic waste—could also be covered at source—that is, the landfill facility or treatment plant. While there are difficulties associated with coverage of emissions from waste, due to the variability of these emissions and the timing of their release, the early inclusion of waste is desirable. Ahead of being covered in the scheme, other policies to encourage mitigation in the waste sector should be pursued. An offset regime may not be appropriate, because it is unclear whether additionality would apply to mitigation activities in the waste sector. Further, it may not be cost effective to implement an offset program for a sector, when full coverage of that sector will be possible in the short term.

Inclusion of forestry, agriculture and land management on the earliest possible timetable is also desirable. The treatment of these sectors is of large consequence for the Australian and global mitigation efforts. Among the many implications are prospects for large-scale participation of Indigenous land managers in the mitigation effort (NAILSMA 2008). There is considerable potential for sequestering carbon through change in land and forest management and agricultural practices (Chapter 22). However, their full inclusion in an emissions trading scheme will require issues to be resolved regarding: (1) measurement or estimation and monitoring of greenhouse gas emissions and removals, and (2) consideration of changes to current emissions accounting provisions for these sectors under the Kyoto Protocol.

Those undertaking reforestation should be allowed to opt in for coverage (that is, liability for emissions and credit for net removal from the atmosphere) from scheme commencement. Reforestation and afforestation activities should be covered, based on full carbon accounting rules, once issues regarding emissions estimation and administration are resolved. Those undertaking deforestation should be liable for resulting emissions.

Forestry is a potential source of domestic offsets, including for net sequestration, even as a covered sector. The use of these offset credits should be unlimited. The increasing carbon content of growing forests should be brought to account. Recent technological developments would seem to make that possible. As reliable estimation methods are developed, carbon stored in wood products and biochar could also be reflected in carbon accounting and under the scheme.

The same comprehensive emissions accounting approach could be applied to agriculture. However, given the magnitude and variety of difficulties associated with emissions measurement in this sector, it is worth investigating whether other policies may deliver greater emissions reductions, at lower cost, than an offset regime. Where practical difficulties interfere with measuring or estimating emissions at the source, a downstream point of obligation may be suitable. For example, under the New Zealand emissions trading scheme, a point of obligation further downstream is being considered for a subset of agriculture emissions—such as covering emissions from enteric fermentation and manure management through a point of obligation at the dairy or meat processor. For Australia, the large coverage issues in agriculture relate to accretion of carbon in soils and vegetation.

Chapters 20 to 23 provide a more general treatment of the role of these sectors in a low-emissions Australian economy.

### 14.3 Releasing permits into the market

The government (or its agent, the independent carbon bank, see section 14.7) will be the sole creator and issuer of permits under the proposed emissions trading scheme. How permits are released into the market will have distributional consequences with respect to the dissipation of their economic rent value.

### 14.3.1 Manner of permit release: auction or free allocation?

Permits can be released by allocating them freely to a range of potential recipients, selling them through a competitive process (auctioning), or through a combination of the two. Whether a permit is sold or granted freely, the recipient will acquire the full economic and financial benefit it bestows because it is a scarce and valuable resource.

The manner of permit allocation will not affect the price of permits or the costs of adjustment to the scheme. Coase (1960) demonstrated that economic efficiency will be achieved as long as property rights are fully defined and that free trade of those property rights is possible. With a well-designed emissions trading scheme in place, the price of goods and services is independent of the approach adopted for allocating permits.

Allocation of permits, however, will have large effects on the distribution of income. Costs and risks differ depending on the manner of allocation. Free permit allocation would be highly complex, generate high transaction costs, and require value-based judgments regarding who is most deserving. If permits were to be allocated freely to existing emitters, an agreed methodology would be required. This would typically involve a baseline emissions profile against which an emitter's entitlement to free permits could be determined.<sup>6</sup> This would involve introducing unavoidable arbitrariness.

Agreeing principles of merit, collection and application of data, and resolution of disputes would be time-consuming. The complexity of the process, and the large amounts of money at stake, encourage pressure on government decision-making processes and the dissipation of economic value in non-productive rent-seeking behaviour.

Free permits are not free. Although they may be allocated freely, their cost is borne elsewhere in the economy—typically, by those who cannot pass on the cost to others (most notably, households). This is explained in Box 14.2, which also highlights the experience of the European Union following the free allocation of permits.

Recent public wrangling in Australia over these issues is evidence enough of the undesirability and impracticality of administering a system of free permit allocation. In contrast, a competitive process (auctioning) for releasing permits will provide greater transparency and have lower implementation and transaction costs. These are important attributes for the credibility and simplicity of the Australian scheme.

Australia, with its well-established legal, regulatory and administrative structure, is in a favourable position for full auctioning of permits. A sound auction design is important to avoid introducing new inefficiencies or distortions in the market.<sup>7</sup>

The introduction of the emissions trading scheme will be associated with many valid claims for increased government expenditure. The full auctioning of permits maintains government policy control over the disbursement of the rent value of permits in the most transparent and accountable manner. Revenue from the auction of permits will provide government with a tool to address market failures in the development of new, low-emissions technologies and to address the scheme's income distribution effects. Permit auction revenue will provide a means of meeting these claims, without placing pressure on public finances.

The Review concludes that there are no identifiable circumstances that would justify the free allocation of permits.

Phase 3 of the European Union's emissions trading scheme and numerous states in the north-eastern Regional Greenhouse Gas Initiative in the United States are also moving to full auctioning of permits.

As discussed in section 14.5, it would be inappropriate to use freely allocated permits as part of the proposed transitional assistance arrangements for trade-exposed, emissions-intensive industries. Doing so would suggest that assistance is being provided on compensatory grounds. This would be wrong.

During the proposed transition phase (2010 to the end of 2012), permits would be sold as of right and at a fixed price rather than auctioned (see section 14.6).

#### **Box 14.2 Pass-through of permit value**

If a manufacturer is emitting as part of its production process and is required to purchase a permit via an auction, the cost will need to be recovered through the price received for the manufactured good.

Alternatively, if the manufacturer is granted a free permit, then it must decide whether the permit is of greater value if used or sold. If it is of greater value to use rather than sell the permit, the manufacturer will need to at least recover its opportunity cost. In other words, the recipient will need to attain value from the use of the permit at least as great as if the permit had been sold at the market price.

The manufacturer selling in the domestic market in the absence of international competition faces the choice of either (1) continuing to manufacture (thus emitting greenhouse gases) and using its permits to acquit its obligation, or (2) selling some or all of the freely acquired permits, and reducing its production to a level consistent with its remaining permits. If the manufacturer decides to use rather than sell the permits, then it has forgone income. Therefore, the manufacturer will recover the price of every permit not sold by the income generated from continuing to produce.

It follows that the impact on the price of goods and services of pricing carbon through an emissions trading scheme is independent of the approach adopted by governments for determining the allocation of permits. Although the price impact is independent of the allocation method, the pass-through of permit price to the price of goods and services will depend on the competitive nature of the relevant market.

**Box 14.2 Pass-through of permit value (continued)**

Studies of the power sector in certain countries under the EU emissions trading scheme indicate pass-through rates of between 60 and 100 per cent, depending on carbon intensity of the marginal production unit and other market or technology-specific factors concerned (Sijm et al. 2006).<sup>8</sup> There will be situations in which a firm will have to decide between passing through the cost of purchasing permits (or reducing emissions), risking a loss of market share, or absorbing those costs with a resultant loss in profit.

**14.3.2 Rate of permit release**

Permits, including those for post-2012, should begin to be sold into the market as soon as possible after the full details of the scheme are finalised and before the scheme commences in 2010. This will provide market participants with a guide to price before price figures directly in domestic market transactions. Liable parties could ensure that they obtained necessary permits in advance of operation of the scheme.

Auctioning should proceed on a fixed schedule—weekly, monthly, quarterly or on any other basis that best suits market participants. The frequency and timing of auctions will have implications for business cash flows and corporate balance sheets. Some parties with an obligation, such as fuel companies, will be required to purchase permits for all emissions from their fuel. Fears about this financial risk have led some fuel companies to suggest that auctions should be as frequent as weekly. The Review expects new 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.

Despite the transitional period of fixed-price permits, fully tradable permits for use from 2013 should be sold into the market in small quantities from 2010 (or even sooner). This will support the development of forward markets and provide guidance to market participants on future prices.

**14.3.3 Flexibility in purchasing permits**

There is some anxiety about potential cash flow problems associated with purchase of permits. The Review does not expect that this will be an important issue in practice if a principled approach is taken when establishing the emissions trading scheme. An elaborate system of financial services will develop for the financing of permit purchases before acquittal. Moreover, it is expected that acquittal will be after receipt of revenue from sales in most cases.

To ease anxieties about financing permits without distorting the system, the Review suggests a simple expedient for at least the early, post-transitional, years of the scheme. On request, the independent regulator could issue emitters with a number of deferred payment permits (taken from the future release trajectory). For

example, some anticipated permit requirements over the next five years could be set aside for direct purchase at the time of acquittal. These would be issued up to a maximum proportion (say, one-third) of expected annual requirements—enough amply to cover permits for which corresponding sales revenue had not been received at the time of acquittal. These permits would allow payment for them to be made at the time of acquittal. The payment price would be the market price on the day of acquittal or the average price over a preceding period.

The effectiveness and need for these special measures should be evaluated at regular intervals. They should be disbanded once they are no longer necessary.

#### 14.3.4 Accounting issues

Implementation of an emissions trading scheme will require resolution of issues relating to financial accounting standards and tax treatment, including:

- avoiding distortions between the purchase of emissions permits and other options for meeting emissions targets—that is, pursuing tax neutrality between purchasing a permit, undertaking capital expenditure to reduce or sequester emissions, investing in research and development or reducing production
- valuing permits, given that they are only valid once, but can be hoarded and loaned. Consideration needs to be given to the discount rate, or interest rate, to be applied over time (Shanahan 2007). The price of the permit will be rising over time so that the interest rate, or the expectation of it, will be built into any lending transaction. The independent carbon bank may also choose to add a margin. Valuation may be on the basis of current market values (market-to-market), but other approaches could be considered.

### 14.4 Lowering the costs of meeting targets

Demand for permits, and therefore the price of permits, will fluctuate over time with economic and seasonal conditions, changes in consumption preferences and technologies. Rigid adherence to annual targets would place large and unnecessary short-term adjustment strains on the economy.

This problem can be partially addressed by setting targets spanning several years, as the Kyoto Protocol has done with its 2008–12 compliance period.

Other options for helping smooth permit prices and helping parties meet obligations include: price controls, intertemporal flexibility in the use of permits and international trade in permits. The Review rejects outright the first of these three options (beyond the transition period) but is highly supportive of the latter two options in providing flexibility for better matching the rate of permit use with domestic permit release schedules. The tradability and integration principles outlined in section 14.1.2 support intertemporal flexibility in the use of permits and international trade in permits.

### 14.4.1 The damaging effects of price ceilings and floors

A ceiling on the price of permits would place a limit on the cost of mitigation in the period in which it is effective, but in doing so it renders unreliable the scheme's capacity to deliver emissions reductions in relation to targets.

Setting price ceilings or floors is inherently arbitrary. These controls would need to be based on predictions on all of the many variables affecting demand for permits: incomes growth; technologies; consumer preferences; seasonal climatic conditions; and others.

More importantly, price ceilings would:

- undermine Australia's role and credibility in international mitigation negotiations since it would not allow firm commitments on levels of emissions
- present a barrier to international linking (see below) because the domestic price ceiling would, through trade, become the default price ceiling for all schemes linked to the Australian scheme
- prevent the intertemporal use of permits (see below) because there would be no limit on the number of permits that could be purchased for use in later years
- dampen the incentive for development of secondary markets. The emergence of these markets is important in transferring risk to the parties best able, and most willing, to manage it. A price ceiling leaves this risk with the government (or more accurately, taxpayers).

Price floors carry the possibility of higher levels of mitigation than anticipated at a higher total adjustment cost than in the absence of the floor.

While politically expedient, the introduction of a price ceiling or floor on permits would damage greatly the normal operation of the scheme.

The specific advantages of a transitional fixed price during the last years of the Kyoto period (2010–12) are discussed in section 14.6.

### 14.4.2 Allowing for the intertemporal use of permits

Permits created under an emissions trading scheme are designed to allow the holder to emit a given unit of emissions within a given emissions trajectory or budget. The economic efficiency of the emissions trading scheme can be improved and the overall cost to the economy reduced by allowing permit holders to determine the most appropriate time to use a permit that is in their possession. All permits should be auctioned without restriction on the time of their use. That is, permits should not be 'date stamped'.

Hoarding of permits by market participants and lending of permits by the authorities (within prudential restrictions) introduces flexibility without breaching emissions budgets.<sup>9</sup> This helps to minimise volatility in permit prices and allows market participants to use permits at the time when they have greatest value. This intertemporal flexibility would cause market participants to see the issue as one

of optimal depletion of a finite resource. Optimisation over time would see the market establish a forward curve rising from the present at the rate of interest, forcing increasingly deep emissions reductions, in an order that would minimise mitigation costs.

Lending by the independent regulatory authority would allow parties to use permits from the future—ahead of their scheduled release according to the trajectory—to meet current obligations. Of course, the loan must be repaid, and the borrower would need to provide security against default. The independent regulator would undertake prudential monitoring of the level of lending. It would place restrictions on the amount of lending if it became so large as to raise questions about the current or future stability of the market. Restrictions on lending could be applied in terms of:

- **Time**—Permits should not be loaned for a period exceeding five years given the plan for the permit release trajectory to be fixed for five years and the same period of notice to apply before major changes are made to scheme operations.
- **Quantity**—The independent carbon bank should lend amounts it believes will not destabilise the current or future market.
- **Eligibility**—Borrowers must be creditworthy. Criteria determining creditworthiness should be applied and communicated so participants have a clear understanding of the likelihood of their eligibility to borrow. Financial intermediaries would provide opportunities for others to borrow, with a commercial margin.

Loaned permits should be repaid when the loan becomes due. The value of the permit at the time of repayment would generally be higher than at the time of lending, and participants would factor in that cost. The independent regulatory authority could also apply an interest rate to cover risk and costs. The interest rate would be raised at times when the authorities judged it prudent to reduce the amount of lending.

The framework of trajectories established in Chapter 12 is one in which there is an expectation that the trajectories will tighten over time. Within this framework, the market would price in the possibility of the emissions budget tightening in future. This would be reflected in a higher forward price for permits, which would be likely to encourage hoarding of permits by participants and discourage the use of the lending provision.

Flexibility in the time of use of permits, through hoarding and lending, means that actual emissions could be above or below the emissions reduction trajectory at a given point. If actual annual emissions were above the level specified in international commitment periods (and if this were not made up by reductions in the non-covered sectors), the government could purchase permits in the international market to meet these commitments.

Hoarding and lending also obviate the need for the date stamping of permits and the large administrative apparatus that would accompany a date-constrained scheme.

### Box 14.3 Minimising risks associated with lending

Recent commentary has suggested that intertemporal flexibility in the use of permits, and in particular lending, might affect the overall timing of mitigation—and delay mitigation—in a way that was environmentally disadvantageous; that it might breach international commitments on emissions reduction targets; and that it would lead to breaches of emissions budgets if loans of permits were not repaid.

There are two reasons why this is unlikely to be an important issue. First, variation in the timing of permit use within firm trajectories on the scale likely to emerge in any foreseeable commercial circumstances would not be material to environmental impact. Instead, the multiple emissions trajectories proposed by the Review would create a bias towards hoarding of permits by participants and away from lending.<sup>10</sup> The initial budgets would be looser than the budgets that were expected to succeed them. The market would therefore tend to price in some probability of budget tightening, so that future prices were higher than those that would probably emerge from expectations that budgets would remain at their current severity. Such expectations would be likely to encourage hoarding, rather than lending.

The Review considers that, with the five-year limit on term of lending, environmental impacts due to variations in timing of acquittal of permits are not likely to be a material consideration. Such short-term lending is akin to smoothing, and would not be expected to have any global environmental impacts. This lending arrangement is similar to the five-year Kyoto commitment period and the five-year carbon budget approach in the UK Climate Change Bill. The Review's approach formalises the mechanisms by which participants can borrow, and has a five-year rolling, rather than fixed, period within which lending can occur.

In the context of international agreements on targets and trajectories, any unlikely strong tendency towards net lending in Australia would be accompanied by a requirement to buy permits abroad to meet commitments on emissions reductions. As a result, delays in reductions of emissions in Australia would be balanced by acceleration of reductions elsewhere.

On the suggestion that loans may lead to a blow-out in the emissions budget because they may not be repaid, this is a matter of governance. The authorities would need to ensure that loans of permits were made only to creditworthy borrowers, that they were backed by security, and that contracts were enforced—just as they would have to ensure that emissions were backed by permits.

#### 14.4.3 Opportunities for international trade and links

The costs of any specified degree of mitigation can potentially be reduced substantially by international trade in permits. Ultimately, global mitigation will only be successful if countries can trade in emissions permits. However, linking with an economy that has a flawed domestic mitigation system will result in the import of those flaws. Variations in the quality of mitigation arrangements across countries

will make the decision to link with particular markets a matter for judgment. Opportunities for international linking of the Australian scheme should therefore be sought in a judicious and calibrated manner.

Currently, opportunities for linking are limited, but are likely to grow. The benefits of linking centre around the potential of integrated carbon markets to:

- reduce mitigation costs and price volatility by making it easier to set and adhere to national emissions budgets
- provide financial incentives for developing countries with opportunities for low-cost mitigation to take on commitments
- provide equal treatment or a level playing field for trade-exposed industries, through convergence of carbon pricing across countries.

But linking also has risks. Since the Australian market is relatively small, if it is linked to other, bigger markets it will become a price taker. The price would be set by carbon markets in the European Union, the United States, Japan or China should they develop and Australia link to them. This exposes Australia to risk from other countries' policies and market responses.<sup>11</sup> Linking might lead to price volatility, for example, due to unexpected external policy change.

Given the rapid growth of emissions-intensive industries in Australia, it is expected that Australia will be a net purchaser of permits for some time. Linking opens the possibility of Australia remaining a large exporter of emissions-intensive products, to the extent that that is economically and environmentally efficient on a global basis, and balancing this with import of permits.

Note that separate approaches are required for trading in permit and offset markets, and for trading with countries that have an emissions cap but not a carbon market.

### **Linking with other permit markets**

Determining strategic and policy parameters for linking with other permit markets should be a role for the Commonwealth Government. The independent regulatory authority would certify individual permit markets as being of a suitable standard for linking.<sup>12</sup> Certification would be periodic. If there were a decline in quality, then the certification could be revoked. Once a market was certified as being suitable then unlimited trading with that market—or more precisely, unlimited acquittal of permits from the overseas market—would be allowed. All private sector parties would be able to trade. There would be no limits on the amount of overseas permits that could be acquitted in fulfilment of obligations under the Australian scheme, at the individual or the aggregate level.

When making its assessment, the independent authority would assess the compatibility of the market proposed to be linked with the Australian one. Both markets need to have firm and mutually acceptable levels of mitigation ambitions. 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 possibly on lending and hoarding (see Box 14.4).

When making its assessment, the independent authority would also need to consider indirect links. If Australia were considering linking to one market, which was itself linked to a third market, Australia would have legitimate reasons not to link to the second market if the rules governing the third market were not acceptable.

In parallel, Australia should seek to strengthen international monitoring and enforcement and to harmonise standards across markets. Deep integration with other markets (that is, joint regulation) should be sought where appropriate and where prospects for policy coordination exist.

Linking, and any resulting changes, would have a fundamental impact on the effect of the emissions limit under the scheme, and on the functioning of the scheme. Therefore, advance notice of new links should be provided in the same way, and with the same five years' notice, as a move to a different emissions reduction trajectory.

Decisions to cut links or alter quantitative limits on acceptance of international permits, however, may need to be taken more quickly if market quality elsewhere deteriorates suddenly. As with the notice for change of trajectory, it would be open to the government to move more quickly in introducing the new trade opportunity, and to balance the revealed effects of the change on the domestic market by countervailing international permit sales or purchases.

In the initial stages, it may be a useful precaution to set a quantitative limit on aggregate permit purchases from certified international schemes. Any such limit would be applied in aggregate (to all certified permits). The limit would only apply in unusual, potentially destabilising circumstances, and therefore should be set so high that it is not expected to be reached in a typical trading period.

#### **Box 14.4 Opportunities for international linking**

Given Australia's close economic links with New Zealand, and common interests on greenhouse gas mitigation, linking or even deeper integration may make sense if the New Zealand scheme is judged to be of sufficient integrity. The Review suggests that, before the indelible conclusion of scheme design in either country, the Australian and New Zealand governments meet at ministerial level to discuss linking, and to identify any impediments to linking that may warrant adjustment to one or other or both scheme designs.

Similarly, scheme design development in Japan will proceed over the next few years, and high-level consultations should take place to ensure that there are no unnecessary impediments to productive interaction.

Proposals for phase 3 (post-2012) of the EU emissions trading scheme appear well designed. Australia should explore the possibility of trading with the EU scheme, although EU views on excluding forestry and agriculture from its scheme may be a problem for two-way linking in the early stages. Australia should seek, at a minimum, agreement with the European Union to accept EU permits into the Australian emissions trading scheme, thus making the EU permit price an effective ceiling price for the Australian market.

#### **Box 14.4 Opportunities for international linking *(continued)***

Building a regional market that encompasses (in the first instance) Papua New Guinea, other south-west Pacific developing countries, and—with greater difficulty and in the context of involvement by other developed countries—Indonesia, would also be desirable. Papua New Guinea and Indonesia have large opportunities to reduce land-use change and forestry emissions and to quickly replace coal (Indonesia) and petroleum with low-emissions fuels. To be fully engaged, these countries would need to accept national emissions trajectories, which would be set on a different basis (that is, for developing countries) than Australian trajectories. Australia should be prepared to work with these countries within the international framework and, if necessary, outside it, to accelerate progress on mitigation, and to demonstrate new modes of cooperating with developing countries.

#### **Permit trading by and with governments**

The Commonwealth Government could always trade directly with other governments and firms in other countries. This could be necessary in order to balance the actual emissions trajectory against Australia's national commitments under an international treaty. Such divergence could occur, for example, if Australia's international obligations were to change before its scheme's trajectory changed or if domestic emitters chose to hoard or lend permits.

Trading through government gateways may also be necessary in purchasing permits from countries that take on recognised national targets but do not have a domestic emissions trading scheme in place. The transition economies are currently in this category, and other developed countries may also decide not to implement emissions trading schemes domestically. Similarly, developing countries would be expected to be sellers of permits but are unlikely to have developed national emissions trading schemes.

#### **Linking with offset markets**

Offset credits arise when emissions are reduced in a country or sector not subject to an emissions limit. Under the Kyoto Protocol, international offsets can be created as certified emissions reductions under the Clean Development Mechanism. Linking with international offsets raises different issues to the acceptance of international permits. This is because of the inherent flaws in the design of offsets (see section 10.4.3). One of the objectives of the post-2012 agreement should be a much smaller role for international offsets, with countries moving instead to national targets, which are in many instances one-sided. 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. If the role of the Clean Development Mechanism is substantially changed or expanded after 2012, a re-evaluation would be needed of international linking in general, both to offsets and to permit markets.

The European Union has limits on the extent of the Clean Development Mechanism for use in its emissions trading scheme, expressed in terms of a share of expected reduction effort (European Commission 2008).

The Review supports a limit on international offsets fixed as a proportion of Australian permits. This would provide greater investor confidence and simplicity.

It is simplest to enforce the limit on acquittal of international offsets in a centralised way, through the regulatory authority. The authority would auction a limited number of supplementary permits, each of which would allow the holder to acquit one Clean Development Mechanism credit. Once attained, these international offset credits could be traded and used as other permits in fulfilment of obligations under the scheme. The market price of permits to acquit a certified emissions reduction would reflect the expected differential between the price paid for certified emissions reductions in the international market and the domestic permit price in the emissions trading scheme.

## 14.5 Addressing the distortion faced by trade-exposed, emissions-intensive industries

### 14.5.1 A dreadful problem

A potential distortion arises if an Australian emissions trading scheme is introduced in the absence of, and until such time that there is, an international arrangement that results in similar carbon constraints or carbon pricing among major trade competitors. If firms in the traded sector were subject to a higher emissions price in Australia than in other countries (which, as price takers, they were unable to pass through), there could be sufficient reason for emissions-intensive activity to relocate, in part or in whole, from Australia to countries with fewer constraints on emissions. This could result in carbon leakage.<sup>13</sup>

The concern arising out of differences in carbon constraints from those applying in our trade competitors is not that some Australian firms may reduce their level of production. Rather, the concern is that some firms may reduce their level of production too far—that is, beyond the level that would eventuate if competitor countries were subject to commensurate carbon constraints (see Box 14.5). This loss in productive capacity may not be reversible at a later stage when a carbon-inclusive world price eventuates in the relevant commodity and goods markets. In addition, new investment in trade-exposed, emissions-intensive industries may be stalled even though it may have been viable had all competitor countries adopted policies consistent with those in Australia.

Therefore, under certain circumstances, there are environmental and economic reasons for establishing special arrangements for emissions-intensive industries that are trade-exposed. However, the choice of options available to countries prepared to act to reduce their emissions ahead of a comprehensive global agreement is dreadful.

No government will be comfortable about subjecting its traded sector to an additional impost on inputs when its trade competitors are not willing to take corresponding policy measures. However, every other alternative facing policy makers means either heavily compromising a national commitment to reduce emissions or increasing the burden on other sectors (non-traded)—most notably, and ultimately, domestic households.

The inevitable consequences of such decisions about burden sharing (including the environment's share) is that the domestic discourse ahead of implementing an emissions trading scheme quickly degenerates into loud professions of support but even louder pleadings for special treatment.

These are dreadful problems for every nation's emissions trading scheme in the absence of a global arrangement. Indeed, the dilemma created for individual governments is so great that it has the capacity to destabilise public support and pervert individual domestic schemes to the point of non-viability. The sum consequence of the compromising of individual schemes could leave the world with little chance of avoiding dangerous climate change.

In the era of global trade, it takes only a handful of non-compliant countries—large or small, developed or developing, high or low emitters—to drive all other countries to implement policies that significantly compromise the overall objective of reducing emissions.

However, there are options that may avoid this destabilisation and descent into ineffective global action before a binding, comprehensive international agreement can be reached.

### **14.5.2 Taking a multitrack approach**

Australia may well have more to lose than any other country from an internationally fractured and partial approach to dealing with trade-exposed, emissions-intensive industries. The immediacy of this problem means that Australia must simultaneously pursue three options for solving this problem. This is not an either/or choice. Two of the options rely on international agreements while the third is a domestic arrangement that could pave the way for an international approach. In order of preference, these options are:

- a comprehensive global agreement on mitigation under which all major emitters have national emissions limits (see chapters 9 and 10)

- effective sectoral climate change agreements for trade-exposed, emissions-intensive industries, placing particular industries on a more-or-less level playing field. These agreements may require backing by a World Trade Organization agreement on border adjustments (see section 10.6),<sup>14</sup> and, as a last resort
- domestic assistance measures for our most exposed industries that address the failure of our global competitors to act on limiting their carbon emissions.

Alongside the negotiation of a global agreement, the negotiation of sectoral agreements in priority areas for Australia (including metals, liquefied natural gas, cement, and sheep and cattle products) must be an urgent international policy priority for the Commonwealth Government. Nevertheless, despite their importance, global and sectoral agreements will not be in effect in 2010 when the Australian emissions trading scheme begins operating. The Review judges that, given effective Australian leadership and diplomatic commitment, there are reasonable prospects for international sectoral agreements for carbon pricing to be in place by the end of 2012, at least for some of the resource-based industries in relation to which the Australian economy would be at greatest risk.

In the meantime, a domestic transitional assistance arrangement for Australia's most exposed industries is required.

### 14.5.3 Getting it right from the outset

In recent public debate and commentary, it has been apparent that industries will seek to influence the design of any such assistance arrangements in ways that maximise their respective returns from the scheme. This is to be expected. It also signals the scale of the challenge faced by policy makers in not becoming distracted by vocal and well organised interests.

Unless government takes a principled policy approach to tackling this dreadful problem from the outset, it has the potential to undermine the efficiency and effectiveness of the emissions trading scheme and with it, Australia's commitment to reducing greenhouse gas emissions. There is a view that we do not necessarily have to get it absolutely right from day one; that we will have other chances to deal with the dreadful problem as time goes by until the rest of the world adopts similar policies. This is a myopic view.

We might not have to get it absolutely right. But if we get it wrong, we will have heavily, maybe permanently, compromised our ability ever to find our way back on to a sound path.

What does 'wrong' mean in this context? It comes down to how we view our domestic policy within the context of international efforts to deal with climate change.

All the models currently in the debate about the shielding or compensation of our trade-exposed, emissions-intensive industries, despite paying lip service to the contrary, are predicated on beliefs that:

- nothing is happening elsewhere in the world
- nothing will happen elsewhere in the world
- nothing done by Australia makes any difference to what happens elsewhere in the world.

These three views are simply wrong. Australian policy is not being made in a world of stagnant attitudes towards climate change policy. It is a highly dynamic environment in which every country is closely monitoring the policies and actions of every other country.

Countries around the world are acting to limit their emissions and are likely to do so with increasing ambition. This is already having an effect on global markets for goods and services that are emissions intensive. This is favouring, for example, Australian exporters of natural gas and potential exporters of coal-seam gas, whose markets relative to other fossil fuels are stronger than they were a few years ago. It is favouring Australian exporters of aluminium, some of whose overseas competitors are facing higher costs as a result of other governments' measures to constrain energy use and emissions.

The Europeans, Americans, Chinese, and Japanese, among others, are all watching Australia with acute interest to see how we handle the treatment of our trade-exposed, emissions-intensive industries. If we get this wrong, it will give every country on earth another excuse also to get it wrong. In aggregate, if Australia and others get it wrong, the global outcome will be a shambles with greatly reduced scope for emissions reductions and the potential for serious damage to the global trading system.

China, the United States, the European Union, Japan—the big economies—may find ways partially and expensively to protect their own industries in a mad scramble for preferment in a world of deep and differentiated government intervention over the dreadful problem. Middle-sized countries like Australia will find it more difficult. But if we get it right, then we can help other countries to get it right. Getting it right means shifting the mindset that is currently dictating the policy debate in Australia.

#### **14.5.4 Efficiently designed transitional assistance arrangements in an ad hoc world**

It is important that we stop thinking in terms of payments to Australian firms in order to compensate them for the effects of the domestic emissions trading scheme. There is no basis for compensation arising from the loss of profits or asset values as a result of this new policy. The rationale for payments to trade-exposed, emissions-intensive industries is different and sound. It is to avoid the

economic and environmental costs of having firms in these industries contracting more than, and failing to expand as much as, they would in a world in which all countries were applying carbon constraints involving similar costs to ours.

There is a strong case to be made on the basis of transitional arrangements that are based on efficiency in international resource allocation. There is a clear distinction between compensation and payments to correct for distortions in the efficiency with which resources are used. Providing assistance to address the failure of our global competitors to act on limiting their carbon emissions is not the same as compensating domestic firms for the government's decision to implement a domestic emissions trading scheme. A constructive and efficient solution must focus on policy design that assists our domestic industries to address the failure of our global competitors to act on limiting their carbon emissions.

Despite this being a complex problem, the correct response is based on the following policy prescription:

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

It is simple. It ensures that firms are encouraged to produce at levels that are sustainable in the context of a global agreement, but they are not required to bear the full cost of doing so on their own until such time as there is an agreement.

It rewards firms that might be described as early movers but does not penalise other producers. It encourages firms to invest in new low-emissions production processes rather than rewarding those who are most successful in their lobbying efforts. Unlike the input-based compensation arrangements currently dominating the debate, this approach fully accounts for the policies of our trading competitors. In this sense it is self-correcting. As long as other trade competitors do not impose carbon constraints, payments continue in full. (See Box 14.5).

As trading competitors adopt emissions reduction policies such as ours, observed world product prices will increasingly reflect their true carbon-inclusive value. As this occurs, the gap between the two will narrow and payments will decline without recourse to a political process. The assistance will simply become redundant once a global agreement is in place. Sectoral agreements for particular products will also remove the need for payments to firms in covered industries.

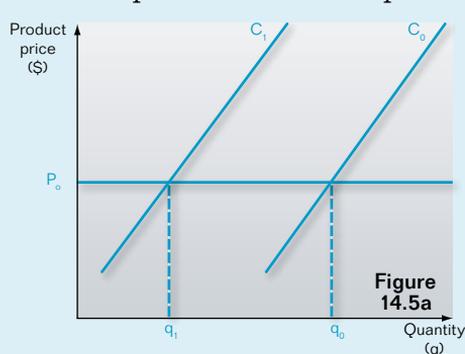
This formulation for calculating payments ensures non-distorted price signals for Australian businesses from the outset of the scheme. Firms will face incentives that accurately reflect those that will eventuate with global or sectoral agreements in place. Australian-based businesses will only reduce domestic production if that is consistent with the long-term loss of comparative advantage in a world of carbon-inclusive pricing.

### Box 14.5 The economics of trade-exposed, emissions-intensive industries and proposed assistance arrangements

Firms will seek to produce the level of goods or services that maximises their profits, although in the short term they might deviate from this objective in order to gain or maintain market share. Some factors of production will be relatively fixed in the short term—namely, the firm’s fixed capital stock such as plant and machinery. Where these firms compete in global product markets they are assumed to be ‘price-takers’. Each firm’s level of production has no bearing on the world price of the relevant product.

These descriptions of a trade-exposed, emissions-intensive firm can be usefully represented graphically with an upward sloping (marginal) cost curve ( $C_0$ ) and a flat price curve set at the world price ( $P_0$ ) (Figure 14.5a). The firm’s resultant profit maximising level of production is given by  $q_0$ .

The imposition of a carbon price increases production costs for all levels of production to the extent that

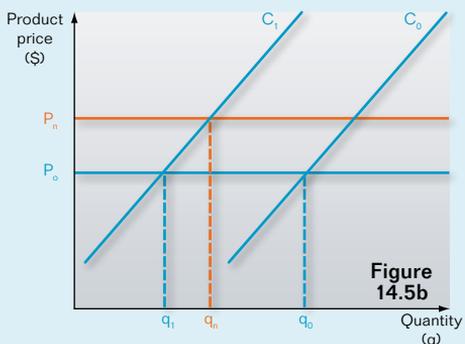


firms employ emissions-intensive (direct and indirect) production processes. This shifts the cost curve to the left ( $C_1$ ) but has no bearing on the world product price (which remains at  $P_0$ ). In response, profit maximising firms will reduce their level of production to  $q_1$ .

Eventually, as more and more countries adopt a carbon pricing regime, the world price of the relevant commodity, good or service will increase to  $P_n$  and domestic firms would produce at a level  $q_n$  (Figure 14.5b). The overshooting problem is demonstrated graphically by the difference in production levels between  $q_n$  and  $q_1$ . That is, a domestic carbon price in the absence of similar schemes elsewhere will see production drop to  $q_1$  only to increase eventually to  $q_n$  in the longer term.

Eventually, as more and more countries adopt a carbon pricing regime, the world price of the relevant commodity, good or service will increase to  $P_n$  and domestic firms would produce at a level  $q_n$  (Figure 14.5b). The overshooting problem is demonstrated graphically by the difference in production levels between  $q_n$  and  $q_1$ . That is, a domestic carbon price in the absence of similar schemes elsewhere will see production drop to  $q_1$  only to increase eventually to  $q_n$  in the longer term.

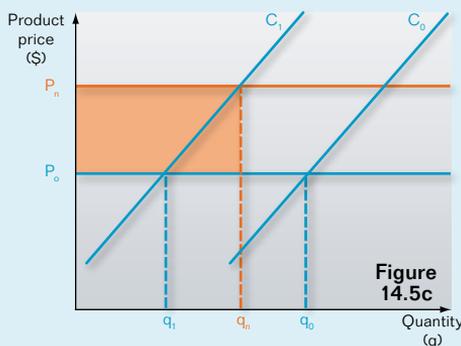
Note:  $q_n$  may be greater, equal or less than  $q_1$  depending on relative movements in domestic production costs (from  $C_0$  to  $C_1$ ) and the carbon-inclusive world product price ( $P_0$  to  $P_n$ ).



Note:  $q_n$  may be greater, equal or less than  $q_1$  depending on relative movements in domestic production costs (from  $C_0$  to  $C_1$ ) and the carbon-inclusive world product price ( $P_0$  to  $P_n$ ).

Assistance for trade-exposed, emissions-intensive industries would most efficiently support the level of production that would be sustainable in the long run ( $q_n$ ) rather than allowing production to overshoot ( $q_1$ ) or trying to maintain an unsustainable status quo ( $q_0$ ) (Figure 14.5c). Such assistance

entails payments (or credits) to firms equal to the long-run price uplift ( $P_n - P_o$ ) for each unit of production. This assistance has the effect of

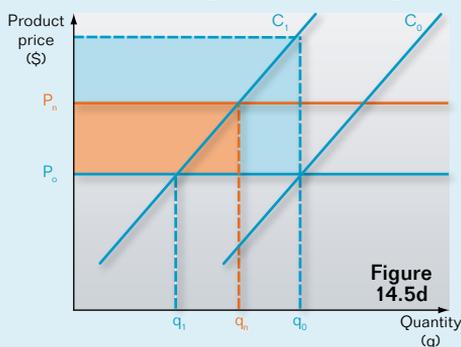


increasing production to  $Q_n$ . The total payment to the firm is shaded in orange in Figure 14.5c.

If payments (or free permits) were to be made to compensate for higher input costs imposed by the emissions trading scheme due to a firm's direct and indirect emissions, the result would be an excess payment to the firm shown by the excess of the blue shaded area over the orange shaded area (Figure

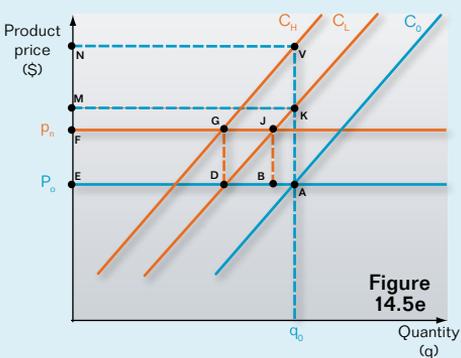
14.5d). These excess payments would be supporting unsustainable levels of production at the expense of investment in R&D in new technologies or support for low-income households.

Moreover, input-based compensatory payments will typically reward



inefficiency rather than promoting investment in new low-emissions production processes (Figure 14.5e), in which the effect of an emissions trading scheme on two firms in the same industry is shown. One firm has low emissions intensity and the other has high emissions intensity, represented by carbon inclusive cost curves  $C_L$  and  $C_H$ , respectively.

Under an input-based compensatory payment, the high-emissions firm would be rewarded with greater payments (the area defined by AENV) than the low-emissions firm (AEMK). This is not the case under the mechanism outlined in section 14.5, which penalises high-emissions firms with lower payments (DEFG rather than BEFJ).



Under an input-based compensatory payment, the high-

emissions firm would be rewarded with greater payments (the area defined by AENV) than the low-emissions firm (AEMK). This is not the case under the mechanism outlined in section 14.5, which penalises high-emissions firms with lower payments (DEFG rather than BEFJ).

This analysis also demonstrates that the mechanism proposed by the Review rewards investment in new low-emissions production processes, whereas an input-based approach penalises such investment. That is, a high-emissions firm investing in new capital to reduce its emissions intensity (moving from  $C_H$  to  $C_L$ ) receives an additional payment under the proposed mechanism (represented by the area  $BDGJ$ ).

Under an input-based compensation scheme, the firm would be penalised with a loss of payments ( $KMN$ ) following the investment.

As with the administration of customs and taxation, the size of potential revenues from the sale of permits suggests strong arguments for delegating administrative judgments to an independent entity. An independent authority will need to be established with the necessary skills to develop carbon-sensitive price models for relevant product markets.

In an open economy like Australia, there are very few non-traded products. Almost all businesses face some degree of trade exposure. It would be nonsensical to think that the above formulation could or should be applied to every product, particularly as in most instances the impact on global product prices from an international carbon price will be negligible. Once general equilibrium effects on the exchange rate are taken into account, the negative effect on trade-exposed industries will be smaller than partial analysis would suggest and some firms will actually receive net benefits.

An eligibility threshold is required. It is defined most appropriately in terms of the expected uplift in the unit price (in percentage terms) in the given compliance period such that:

- only products that are expected to increase in price by a percentage in excess of a low threshold would attract credits under the scheme
- eligible producers would receive credits for that part of the expected price uplift that is in excess of the threshold
- an eligible firm could not receive credits in excess of its permit obligations in any compliance period.

This is best demonstrated with a numerical example in which the threshold ratio has been set at, say, 3 per cent and the observed world price for a particular product is \$1000. Following the introduction of the Australian emissions trading scheme, the independent authority forecasts that if a corresponding global carbon-pricing regime were in place, then the world price would rise by \$90 per unit (to \$1090). The firm would be eligible for credits for each unit produced in Australia because the projected price rise, at 9 per cent, is in excess of the 3 per cent eligibility threshold. The firm would receive credits against its permit obligation valued at \$60 per unit of domestic production.

Special arrangements may be required, as a safeguard, where the estimated price uplift factor exceeds a relatively high proportion of gross value added per unit of production.<sup>15</sup> This is intended as an exceptional rather than a standard design feature.

Credits could be provided in the form of cash or as cash-equivalent reduction in a liable party's obligation to acquit permits at the end of the relevant compliance period.

The inherent arbitrariness of the eligibility threshold will make it the subject of intense scrutiny and lobbying by special interests. Yet there will be no counterbalancing representation arguing against the lowering of the thresholds—

even though doing so inevitably shifts the burden onto others in the economy and community. Policy makers will stand alone in having to resist the temptation to appease narrow interests.

The calculation of expected price uplift factors, the frequency and timing of credits being distributed to eligible firms, and the relevant accounting rules should all operate to ensure minimum disruption and maximum certainty. Expected price uplift factors would be produced by the independent authority at regular intervals (at a minimum, yearly) through a transparent and consultative process. The process used by the Productivity Commission in inquiries on protection issues is a suitable model.

Bedding down the appropriate institutional arrangements, methodologies and operating rules should be a matter of priority. As the same arrangements would be of benefit to every country tackling the dreadful problem in regard to its own trade-exposed, emissions intensive firms, Australia should, over time, look to form international institutions to provide global price indexes for use in calculating credit arrangements for eligible businesses in all countries. This would ensure globally efficient outcomes.

#### 14.5.5 General business tax cuts versus special assistance

Materiality tests and algorithms for assistance payments will to some extent be arbitrary and will impose some additional costs on business that, in principle, would warrant assistance. Policy makers can be expected to encounter extreme pressure to err towards generosity in the setting of thresholds. This poses risks to the credibility of the entire emissions trading scheme.

If the eligibility threshold is set too low, the burden of emissions reductions will be shifted elsewhere in the economy.

This is not to say that firms that do not meet the eligibility threshold would not encounter some disadvantage from the introduction of the emissions trading scheme. However, government simply cannot efficiently administer, and the community cannot afford, a firm-by-firm assistance scheme that effectively addresses this impact at such an atomistic level of application.

If this were considered to be a material issue in development of the arrangements for trade-exposed, emissions-intensive business activities, it would be better to introduce an explicit element of efficiency-raising reduction of business taxation than to pare the thresholds to administratively difficult levels.

It is expected that direct assistance to trade-exposed, emissions-intensive industries, proposed above, would be significantly below 30 per cent of total permit revenue (though this would be tested as data becomes available to the regulatory authority). The government could notionally return to business taxpayers in an efficient way an amount of permit revenue roughly corresponding to the

gap between 30 per cent and the amount actually paid as permit credits to trade-exposed, emissions-intensive firms.

While this approach sacrifices the precision of targeted assistance schemes, well-designed tax relief has the potential to reduce rather than increase the deadweight loss incurred by the economy. Obvious candidates for reduction or abolition would be input-based or transaction taxes, which are highly inefficient. Any such tax cuts should be ongoing not transitional.<sup>16</sup>

## 14.6 Transition period: Australia's emissions trading scheme to the end of 2012

In the remainder of the Kyoto period, ending in 2012, Australia should ensure that it meets its Kyoto targets. It should have no great difficulty in doing so—and any adverse surprise over the next few years is unlikely to be so large that it cannot comfortably be met by the purchase of international permits.

However, the remainder of the Kyoto period presents challenges for the implementation of a domestic emissions trading scheme.

The timing of a global agreement to replace the Kyoto Protocol remains unclear. It is not even certain that the full details of such an agreement will be resolved ahead of the commencement of Australia's emissions trading scheme in 2010. There would be considerable benefit in avoiding the unproductive interaction between the early period of a new trading system and Australia's participation in crucial global negotiations. Otherwise, this period will be one in which every new development in the international negotiations, encouraging or adverse, could have a disproportionate and unhelpful effect on the domestic permit price in an unconstrained market.

Further, there is a chance that if Australia was to overperform on its Kyoto targets, the price of permits could be zero or close to zero. Allowing permits to be hoarded for later use may help maintain a positive price, but it is far from clear that market participants would do so if significant uncertainty remains about a future international agreement.<sup>17</sup>

A period of derisively low prices would be damaging for the credibility of the scheme in its formative years. Despite this being the likely outcome, business has continued to express concern about high permit prices in an unconstrained scheme.

The remainder of the Kyoto period is best considered as a transition period in which the emissions trading scheme is established soundly for the larger task that will lie ahead of it after 2012. The Review considers the most appropriate approach to the transition period will be to fix the permit price in order to address both the likelihood of very low prices and fears of the opposite outcome.

During the transition period, permits should be sold by the independent regulatory authority at \$20 per tonne in 2010 (in 2005 prices), rising each year by 4 per cent plus the percentage increase of the consumer price index (see section 12.1). This is more or less the price path that the modelling suggests would

be followed if there were effective global agreement directed towards stabilisation of global greenhouse gas concentrations at 550 ppm. If a post-Kyoto agreement is struck around 550 ppm, the fixed price is likely to allow relatively seamless transition to a floating price regime.

This will have implications for the implementation and management of the scheme before and during the transition period.

- It will be necessary to separate the markets for permits before and after the end of 2012. In particular, it will be necessary to prevent the hoarding of permits acquired in the period of price controls, for use after 2012.
- It will preclude the opportunity for two-way trade of permits, as no foreign system will accept Australian permits and, on that basis, may even prevent their emissions entitlements from being sold into the Australian scheme.
- It will need to be accompanied by sale of post-2012 permits from the time that full details of the scheme had been articulated. This will be important to provide guidance on post-2012 market pricing, and to establish the credibility of post-2012 arrangements.

Fixing the price of permits will also provide a less anxious environment for implementing the assistance arrangements for trade-exposed industries proposed in section 14.5. It may even obviate the need for assistance payments during the transition period and allow time for diplomacy to work towards establishing satisfactory global or sectoral agreements.

## 14.7 Governance: institutional arrangements

Scheme governance has large implications for the efficiency, stability, credibility and simplicity of the scheme. New institutions will be required to operate and regulate the emissions trading scheme.

Some of the governance functions related to the scheme are, by their nature, the prerogative of government. These include decisions about establishing the scheme—setting the emissions limit and providing assistance to those whose incomes are reduced by the introduction of the scheme (for example, structural adjustment assistance and payments to low-income households). Government will undertake policy functions as distinct from an administrative role.

Legislation of key features of scheme design, such as the permit release trajectory, can assist stability—particularly in the Australian situation of qualified government control of the legislative process.

The administrative content of several of the governance functions is of a kind that lends itself to independent administration, particularly due to the large amounts of money associated with administrative decisions (for example, payments to trade-exposed, emissions-intensive industries). Government would be under pressure from particular interests to favour them in administrative decisions. There is an advantage in delegating administrative judgments to an independent entity.

The Review suggests that the administration of the emissions trading scheme be made the responsibility of an independent authority. An independent carbon

bank should be established with a high degree of executive independence in the exercise of its powers. The closest analogue is the Reserve Bank of Australia. As with the Reserve Bank, the powers of the independent authority would be defined by legislation and by agreement with government. This same legislation would define the way in which government would exercise its policy responsibilities in relation to the scheme and the obligations of private parties in relation to emissions and the need for permits.

The overarching objective of the independent carbon bank should be the maintenance of the long term stability of the Australian emissions trading scheme. It must be given the necessary powers and sufficient discretion in order to fulfil this duty.

The distinctive roles of government and of the proposed independent carbon bank are summarised in Table 14.1.

**Table 14.1 Governance of an Australian emissions trading scheme**

Functions of scheme governance	Government responsibilities: Policy making	Independent carbon bank: Administration and regulation
Emissions trading scheme rules	All, including coverage, point of obligation, acquittal, offset rules and standards (domestic and foreign), <sup>a</sup> accounting rules, compliance regime.  Undertake reviews of scheme rules. First review to occur two years after commencement.	Advise government on rules and their application.  Manage monitoring, reporting and verification systems.  Enforce compliance.
Setting emissions limit	Decide/announce: <ul style="list-style-type: none"> <li>• initial target and trajectory</li> <li>• conditions for changing target and trajectory</li> <li>• nature, extent and timing (with five years' notice) of changes to the target and trajectory.</li> </ul>	Administer movement from one emissions trajectory to another after government has certified that the conditions of change have been met.
Permit issuance  Use of revenue from permit sales	Determine manner of permit issuance and setting fixed prices for permits during the transitional period (2010–12).  Receive revenue for general allocation under formula. <sup>b</sup>  Decide on the use of permit revenue.	Sell permits in line with fixed prices (2010–12) or emissions trajectories established by government.  Purchase 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.
Trade-exposed, emissions-intensive industries	Negotiate global agreements and encourage effective sectoral agreements.  Set rules for assistance payments and determine eligibility thresholds.	Calculate price uplift factors and assess eligibility.  Make payments according to agreed thresholds and formula.

**Table 14.1 Governance of an Australian emissions trading scheme (continued)**

Functions of scheme governance	Government responsibilities: Policy making	Independent carbon bank: Administration and regulation
Hoarding and lending Market supervision	Set broad policy on hoarding and lending, market participation	Make decisions on lending and interest rates. Monitor integrity of the market and supervision of transactions. Monitor the creditworthiness of borrowers, and more generally the relationship between hoarding and lending and the stability of the market. Undertake stabilisation interventions when required.
Trade rules (international linking)	Establish international trade agreement and rules for international linking.	Certify that conditions have been met for linking. Monitor international trade by market participants. Purchase international permits to reconcile domestic and international obligations (for example, to meet a 2020 target). Undertake stabilisation interventions when required.

- a There should be independent, expert review, amendment and approval of offset protocols and offset projects.
- b Revenue would come from sale of permits, interest on loans of permits and profits from stabilisation interventions (losses would be a sign of counterproductive intervention and to be accounted transparently). The formula would leave the independent carbon bank sufficient income to cover the costs of its overhead, plus monitoring and enforcement of the system, including international permit purchases that are necessary to meet international obligations.

## 14.8 Addressing the relationships between an emissions trading scheme and other policies

Largely for historical reasons, a variety of policies have been put in place by the Commonwealth, State and Territory governments over the last decade with the aim of reducing greenhouse gas emissions. With the advent of a broad-based emissions trading scheme, other emissions reduction policies become largely redundant. The only useful role for additional policies of this kind is to reduce the effect of market failures, so as to reduce the cost of adjustment to the low-emissions economy.

### 14.8.1 The Mandatory Renewable Energy Target and the emissions trading scheme

The Mandatory Renewable Energy Target (MRET) was introduced in 2000 to drive the take-up of renewable energy and reduce emissions. MRET operates by

placing an obligation on energy retailers to purchase a proportion of their energy from renewable sources in the form of renewable energy certificates. The value of a certificate is equal to the difference in the cost of producing the renewable energy and the average wholesale price of electricity. By design, MRET causes deployment of the lowest-cost eligible technologies. To date, the increase in renewable energy production has been mostly wind and solar hot water. As renewable energy production is currently more expensive than alternative sources, this higher cost is passed on by retailers to households and businesses.

An important design feature of MRET is the shortfall penalty of \$40/MWh, which operates as a cap on the certificate price. The shortfall penalty is not indexed. To date, the price cap has been largely untested because, although the price of renewable energy has been increasing, the average wholesale price of electricity has been increasing at a similar rate.

MRET is set to expand from the current 9500 gigawatt hours to 45 000 gigawatt hours (around 20 per cent of energy demand) by 2020. The expanded MRET will drive increasingly expensive options for the deployment of currently favoured technologies (for example, building wind farms in more remote areas) as well as the deployment of newer and more expensive technologies (such as geothermal and solar photovoltaic). This will lead to a higher renewable energy certificate price and higher electricity prices for consumers. Conversely, the recent uplift in world energy prices (coal and gas) raises the average wholesale price of electricity and puts downward pressure on the certificate price.

The emissions trading scheme differs in objective and operation from MRET, in that it caps the level of emissions and is neutral as to how the necessary reductions will be achieved. In some cases, the emissions cap may lead to investment in renewable energy production, but in other cases it may lead to fuel switching or the deployment of more efficient operating practices among existing energy producers or other sectors of the economy. The market, rather than government, is left to find the solution. A competitive market can be expected to deliver these emissions reductions at the lowest cost to the community and business.

Implementing the expanded MRET alongside the emissions trading scheme means that these two policy instruments, with their differing objectives, will be interacting in the electricity market. This clash of objectives will potentially be detrimental to electricity users (households and businesses) and electricity producers (incumbent and new providers). Many factors will affect the extent of this adverse interaction. The most notable is the trajectory of the emissions trading scheme and the ramp-up rate of MRET (see Table 14.2). Both schemes must, by force of law, meet their mandated targets. The concerns are threefold: What is the cost? Who will bear the cost? What are the long-term consequences?

**Table 14.2 Interaction between the emissions trading scheme and the Mandatory Renewable Energy Target**

		MRET ramp-up rate	
		Gentle	Aggressive
Emissions trading scheme trajectory	Gentle	<ul style="list-style-type: none"> <li>• Low permit price</li> <li>• Moderate renewable energy certificate price</li> <li>• Moderate impact on retail electricity prices</li> <li>• Mitigation activity outside MRET unlikely</li> </ul>	<ul style="list-style-type: none"> <li>• MRET cannibalises emissions trading scheme</li> <li>• Very low (even zero) permit price</li> <li>• Emissions trading scheme becomes non-functional</li> <li>• High renewable energy certificate price</li> <li>• High impact on electricity prices</li> <li>• Little mitigation activity outside MRET</li> <li>• No incentive for investment in other low-emissions technologies</li> </ul>
	Aggressive	<ul style="list-style-type: none"> <li>• Permit price steadily increases over time</li> <li>• As wholesale electricity prices rise, renewable energy certificate prices decline, possibly to zero—implying early phase-out of the MRET</li> <li>• Moderate-to-high impact on retail electricity prices—depending on level of mitigation elsewhere in the economy</li> <li>• Investment in portfolio of renewable and other low-emissions technologies</li> </ul>	<ul style="list-style-type: none"> <li>• Permit and certificate price paths would be highly dependent on interaction of the two schemes</li> <li>• Prices could be range from high to very low</li> <li>• MRET most likely to cannibalise emissions trading scheme</li> <li>• High impact on retail electricity prices</li> <li>• Most investment likely to be in increasingly expensive renewable energy options</li> </ul>

On balance, the Review considers that carrying forward the existing, non-indexed shortfall penalty of \$40/MWh into the expanded MRET provides the best opportunity for a smooth transition from MRET into the broader emissions trading scheme. The units of account are different for MRET and the emissions trading scheme, but it happens that \$40/kWh in MRET under current conditions roughly corresponds to \$40 per tonne of CO<sub>2</sub>-e in the emissions trading scheme. Since the shortfall penalty is a feature of the current MRET, its retention would seem to be fully consistent with the government's commitment. As the price of permits increases above \$40–45 per tonne of CO<sub>2</sub>-e, the emissions trading scheme would come to dominate investment decisions and the economic effects of MRET would be subsumed within the emissions trading scheme.<sup>18</sup>

Maintaining the shortfall penalty would place an upper limit on MRET's higher costs relative to the emissions trading scheme, and on MRET's contribution to electricity prices, while maintaining the incentive for investment in renewable energy that can be delivered below this level. Furthermore, as the emissions trading scheme took over from MRET, some of the rents previously accruing to investors in renewable energy (who will now be competitive with other forms of carbon-intensive energy) would shift to government and could be used to support research, development and commercialisation of newer technologies (see Chapter 18).

Modelling will be important to provide some indication of the likely impacts of MRET on the permit prices and mitigation occurring under the emissions trading scheme. It will be critical that the interactions between MRET and the emissions trading scheme are fully understood when the parameters of the scheme are being finalised (see Box 14.6).

#### **Box 14.6 Expanded MRET**

The Garnaut–Treasury modelling did not include the Commonwealth Government’s commitment to an expanded MRET; however, a brief high-level assessment of the implications of the scheme is instructive.

By 2020, under the 550 ppm scenario in which the emissions trading scheme is the primary vehicle for delivering lower emissions, electricity generation would be 257TWh—of which 23 per cent would be gas fired and 12 per cent from renewable sources (including hydro).

The achievement of the 20 per cent expanded MRET would require an additional 21TWh of renewable energy. Technology forecasts from the Review’s 550 ppm scenario suggest that this demand would be filled largely by wind-based generation (representing an additional 8000MW of installed wind capacity). If this capacity were to replace gas-fired power generation as a result of the MRET, as seems reasonable to assume, the additional cost would be around \$750 million to \$1.1 billion per annum by 2020.<sup>19</sup>

These estimates compare with estimates by CRA International (2007) of a GDP impact of \$1.5 billion. The higher estimate by CRA largely arises from its assumed electricity demand of 377TWh by 2020, which is about 50 per cent higher than assumed demand in the Garnaut–Treasury model (257TWh).

There is an interesting and seemingly perverse consequence of expanding MRET at the same time as the emissions trading scheme is to be implemented. Having both schemes operating side by side could see an increase in coal-fired power generation (by more than 2000MW) as gas-fired plants are crowded out by MRET. This would not occur if the emissions trading scheme were operating without MRET.

### **14.8.2 Greenhouse Gas Reduction Scheme**

The New South Wales Greenhouse Gas Reduction Scheme (GGAS) is one of the world’s first mandatory greenhouse gas emissions trading schemes, originally designed to run until 2012.

Both the emissions trading scheme and GGAS cause a price to be applied to greenhouse gas emissions associated with energy consumption. It is not efficient or appropriate to have multiple emissions price signals. Therefore, NSW legislation provides that GGAS will cease to operate upon commencement of the emissions trading scheme (NSW Department of Water and Energy 2008).

There are several issues to consider in ensuring a smooth transition from GGAS to the emissions trading scheme, including:

- Treatment of accredited abatement providers—if emissions reduction projects under GGAS were not reaccredited at all under the emissions trading scheme, or they were reaccredited but scheme permit prices were lower than certificate prices under GGAS, this could reduce the income stream and project value.
- Forestry carbon sequestration projects—reaccreditation under the emissions trading scheme would be necessary, and depend on rules developed for the inclusion of forestry in the emissions trading scheme.
- Unused GGAS certificates, which may be held by existing providers, intermediaries or parties with an obligation—transition arrangements should not provide an incentive for oversupply of certificates, or holding of them in expectation of a higher price under the emissions trading scheme (and non-compliance with GGAS).

### 14.8.3 The voluntary market for emissions reductions

There is a growing market for individuals, households and businesses wishing to voluntarily purchase credits for greenhouse gas reductions, to offset emissions associated with their activities. Such measures include the purchase of GreenPower, and offset credits from the Commonwealth Government Greenhouse Friendly program.

As the emissions trading scheme develops, both in depth and breadth, it is likely to cannibalise the market for such measures, although the nature and pace of such changes are uncertain.

Voluntary demand for offsets is likely to continue even with an emissions trading scheme. For example, the South Australian Government believes offsets will play a role in meeting its commitment to be carbon neutral by 2020 (Government of South Australia 2008).

Robust standards for voluntary offsets are important. It is likely, and desirable, that the voluntary emissions market will move increasingly toward the compliance market, in terms of standards.

As well as buying domestic offset credits, under an emissions trading scheme those looking to purchase emissions reductions voluntarily may buy and surrender compliance-grade credits, including emissions permits and domestic and international offset credits.

## 14.9 Summary of design features of an Australian emissions trading scheme

It is very likely that an Australian emissions trading scheme will be established ahead of a comprehensive global agreement to reduce emissions. For now, it remains unclear what can be expected of international negotiations, but this should not delay the introduction of the domestic scheme in 2010.

Table 14.3 provides a summary of the Review's preferred design features for the Australian emissions trading scheme.

**Table 14.3 Overview of the proposed emissions trading scheme design**

Design decision	Proposal
Transition period	The two or more years between scheme commencement (2010) and the end of the Kyoto period (end 2012) should be treated as a transition period to an unconstrained, fully market-based emissions trading scheme.
Setting an emissions limit	The overall national emissions limit should be expressed as a trajectory of annual emissions targets. A number of trajectories should be specified upon establishment of the scheme. The first, up to 2012, should be based on Australia's Kyoto commitments. The others, for the post-2012 period, should reflect increasing levels of ambition. Movement between them should be based on developments in international negotiations.
Changes to the emissions limit	Movement from one trajectory to another should only occur in response to international policy developments and agreements (which should allow for new information and developments of an economic or scientific kind). Government should provide five years' notice of movement to another trajectory. Any gap between the domestic emissions trajectory and international commitments during this period would be reconciled by purchasing international permits or abatement in non-covered sectors.
Coverage	Gases: The six greenhouse gases as defined by the Kyoto Protocol. Sectors: Stationary energy, industrial processes, fugitives and transport should be covered from the outset. Waste and forestry should be covered as soon as practicable. The inclusion of agriculture should be subject to progress on measurement, administration and cost effectiveness.
Domestic offsets	Domestic offsets should be allowed from uncovered sectors if it is cost effective to do so. Unlimited offset credits for net sequestration should be accepted from forestry (and potentially soil management practices). The appropriateness of an offset regime for agriculture should be analysed further in the context of coverage of these emissions. During the transition period, the purchase of offset credits would be expected to occur only up to the value of the fixed permit price.
Point of obligation	The point of obligation should be set at emissions source when efficient. Otherwise, an upstream or downstream point of obligation should be preferred where transaction costs are lower, accuracy of emissions measurement higher, or coverage greater.
Issuing (or releasing) permits	Permits should be released according to emissions reduction trajectory, with all permits auctioned. Auctions should take place at regular intervals. There should be no limit on the use of permits (that is, no date stamping). During the transition period, permits should be sold at a fixed price as of right. Permits to be released according to demand, rather than in line with the emissions reduction trajectory. Permits for post-2012 should be auctioned as soon as possible.
Trading permits	Unlimited trading of permits should be allowed. Trading of transition period permits is unlikely. Some forward trading of post-2012 permits can be expected.

**Table 14.3 Overview of the proposed emissions trading scheme design**  
*(continued)*

Design decision	Proposal
International links	<p>Opportunities for international linking of the Australian scheme should be sought in a judicious and calibrated manner.</p> <p>Government may purchase international permits or offset credits to meet its Kyoto commitment if Australia's national emissions exceed its target.</p>
Price controls	<p>Price controls are not supported except during the transition period to end 2012.</p> <p>During this transition period, permit price should be fixed, starting at \$20 per tonne and increasing by 4 per cent per annum plus the rate of inflation.</p>
Inter-temporality (flexibility in time of use of permits)	<p>Unlimited hoarding should be allowed, except for permits issued for the transition period.</p> <p>Official lending of permits by the independent carbon bank to the private sector should be allowed within five-year periods.</p> <p>Hoarding and lending would not be expected within the transition period.</p> <p>Hoarding of fixed price permits not allowed for use beyond the transition period.</p>
Treatment of trade-exposed, emissions-intensive industries	<p>Global and sectoral agreements to achieve comparable treatment of emissions in important competitors should be pursued as a priority. If they 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.</p>
Governance	<p>The emissions limit and policy framework for the scheme should be set directly by government.</p> <p>The scheme should be administered by an independent authority (independent carbon bank).</p>
Compliance and penalty	<p>A penalty should be set as a compliance mechanism. The penalty does not replace the obligation to acquit permits; a make-good provision should apply.</p>

## Notes

- 1 In recent years, debate in Australia has been promoted by (1) the National Emissions Trading Taskforce set up by state and territory governments in 2004 (National Emissions Trading Taskforce 2007); (2) the Task Group on Emissions Trading established by the former Prime Minister in late 2006 (Prime Ministerial Task Group on Emissions Trading 2007); (3) this Review's Emissions Trading Discussion Paper in March 2008 (Garnaut 2008a), its Draft Report in July 2008 (Garnaut 2008b) and its Supplementary Draft Report in September 2008 (Garnaut 2008c); and (4) the Carbon Pollution Reduction Scheme Green Paper released by the current Commonwealth Government in July 2008 (DCC 2008c). Much has also been learnt from experiences with other schemes such as the New South Wales Greenhouse Gas Reduction Scheme, the European Union emissions trading scheme and the movement toward emissions trading in other jurisdictions, including New Zealand, Japan, and parts of the United States and Canada.

- 2 It will be important to implement measures to drive emissions reductions in the non-covered sectors ahead of their inclusion in the scheme, to ensure that the task of achieving an economy-wide emissions reduction target is not borne solely by sectors covered under the scheme.
- 3 There are several tests of additionality. For example, regulatory additionality would require emissions mitigation to be undertaken beyond what is undertaken to comply with existing legal or regulatory requirements. Such tests are arbitrary, and potentially a source of distortion. If the tests of additionality are poorly constructed they will contravene the scarcity and credibility principles outlined in section 14.1.2.
- 4 Further information about obligations under the National Greenhouse and Energy Reporting Act and supporting regulations is available from the Department of Climate Change at <[www.greenhouse.gov.au/reporting/](http://www.greenhouse.gov.au/reporting/)> and DCC 2008b.
- 5 Domestic and civil aviation and sea transport should be included, with trade-exposed, emissions-intensive industry principles applied if appropriate. Bunker fuels, which are used in international aviation and shipping, are not covered by the Kyoto Protocol or included in countries' emissions targets (Article 2.2). The European Union, subject to final agreement, will include emissions from domestic and international aviation—operators of all arriving and departing flights—from 2012 (flights within the European Union are to be covered in 2011) (European Commission 2008). A sectoral agreement between international transport providers, such as a global fuel tax, should be pursued as a priority (see Chapter 10).
- 6 For instance, options for an emissions baseline could include emissions in a particular base year or years (say, 2008 to 2012); average emissions per unit of production, based on installed technology in a base year; average emissions per unit of production based on best practice technology; other approaches; or any combination of these.
- 7 See, for example, Evans and Peck (2007) for a discussion of key issues to consider in designing an emissions trading scheme permit auction.
- 8 During the first two phases of the EU scheme, the majority of allowances were allocated free of charge, including to established fossil fuel-fired electricity generators. Generators have generally passed on to consumers the opportunity cost of permits that they were given free (European Commission 2005; IPA Energy Consulting 2005). Taking into account the demonstrated ability of generators to pass on the notional cost of emissions allowances, the European Commission has recommended that all permits for the power sector be auctioned in the post-2012 arrangements (European Commission 2008).
- 9 The term 'lending' refers to transactions of permits between the independent authority and the private sector. The term is adopted in preference to 'borrowing' in order to differentiate the Review's proposal from other schemes that involve the free allocation of permits. These schemes have provided eligible parties with a guaranteed future stream of entitlements to free permits (which are date stamped). In such schemes, 'borrowing' allows the private party advanced access to their future permit entitlement—that is, to use permits ahead of their eligible (or 'stamped' use date). The Review rejects such arrangements on the grounds that all permits should be auctioned without restriction on the time of their use.
- 10 In order for hoarding to occur, there would have to be early and cost-effective mitigation opportunities beyond those set by the emissions reduction trajectory.

- 11 There is a particular issue in relation to surplus eastern European permits from the Kyoto period. Some argue that the Russian permits and some others should not be purchased because they have not arisen as a result of mitigation effort. Future treaties would not be credible, however, 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. Pre-2012 purchases of such permits in Australia could be restricted to government, and not opened to the market.
- 12 Ultimately, the decision to link or not is within the gift of executive government, given the international dimensions. Therefore, certification may involve an additional step in which the independent carbon bank makes a recommendation to the government regarding linking with another scheme.
- 13 Carbon leakage refers to a situation whereby production moves from Australia to other countries without carbon constraints and potentially with higher emissions intensity production processes. The effect is that overall emissions remain unchanged. They may even increase.
- 14 It is possible that even with a broad international agreement in place, trade-exposed, emissions-intensive industries in some countries may continue to operate outside of a national emissions limit. As outlined in Chapter 10, the sectoral agreements would ensure that trade-exposed, emissions-intensive industries in countries without national emissions limits would nevertheless face an emissions price comparable to those in countries which have such as limit. The WTO agreement, proposed in section 10.6, would allow countries to impose border adjustments to ensure that competitors in countries with neither national emissions limits nor sectoral agreements do not have an unfair advantage. The WTO agreement would also play the important role of preventing the use (or rather, abuse) of border adjustments as instruments of protectionism.
- 15 For example, if the ratio of price uplift (in dollar terms) to gross value added per unit of production exceeds a proportion in the order of, say, 10 per cent, then eligible producers could receive credits for that part of the expected price uplift that is in excess of the threshold when the latter is calculated in dollar terms.
- 16 Detailed advice on tax reductions could be provided within the Henry Tax Review, due to report in December 2009.
- 17 There have been suggestions that hoarding could be allowed to overcome the risk of a near-zero permit price while a price ceiling could also be set to prevent unacceptably high prices. As outline in section 14.4.1, a price ceiling is incompatible with hoarding provisions.
- 18 The assumed equivalence of \$40/MWh shortfall penalty and permit prices of \$40–45 per tonne is calculated on an assumed average emissions intensity ratio of 1.0 to 0.9, respectively, for the electricity supplied beyond MRET.
- 19 If the expanded MRET was to be implemented as a minimum of 60 000GWh of renewable energy by 2020, then this would add approximately \$300 million per annum to this estimate. This target is identified as a policy outcome in a consultation paper released in July 2008 by the COAG Working Group on Climate Change and Water (COAG 2008).

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