1 Policy framework

Key points

- The global nature of the greenhouse gas (GHG) problem has profound implications for the objectives and design of Australian climate change policy.
- National action to reduce emissions should be calibrated to the prospect and nature of the international response.
- The Australian Government's stated intention is to determine GHG emissions targets, and then pass the obligations for achieving these targets to firms using an emissions trading scheme (ETS).
- Once an ETS is in place, other abatement policies can change the mix of emission reduction activities, but generally will not bring about any further reduction in *total* emissions, or do so at higher cost.
- Supplementary abatement policies therefore need to offer other net benefits, such as lowering the cost of emission reductions (now or in the future). The potential suite of helpful policies to supplement an ETS include measures to:
  - overcome barriers to the development of low-emissions technologies and to the take up of cost-effective energy efficiency measures
  - promote emission reductions in sectors not initially covered by the ETS.

1.1 Scope of the submission

This submission sets out a framework, based on good practice policy principles, to identify the role of policies to supplement emissions trading. For the purposes of this submission, supplementary policies are defined as climate change mitigation[1] policies that are used in addition to an emissions trading scheme (ETS). The framework is then applied to different types of policy, including those to:

- support the development of low-emissions technologies
- increase energy efficiency where cost effective to do so

[1] The term 'mitigation', in this submission, encompasses both actions to achieve emission reductions directly (known as 'abatement') and actions to develop low-emissions technologies, which can make future emission reductions easier and less costly to achieve.

- encourage abatement in sectors not initially covered by the ETS.

The aim of the submission is to identify which policies are warranted to supplement emissions trading and which are not. Many existing and proposed policies are considered. In some cases a judgement on their merits is given, while in others issues that should be examined in more detailed reviews are outlined. A particular focus is given to targets for renewable energy and other types of low-emissions energy generation. This reflects the fact that, were the proposed expansion of the Australian Government's Mandatory Renewable Energy Target to go ahead, it would easily be the largest single element of supplementary policy.

The issues that fall within the scope of this submission are of great importance. The extent and composition of supplementary policies will have a large influence on the cost of achieving whatever greenhouse gas (GHG) emissions targets are chosen.

That said, the scope excludes many major issues covered by the terms of reference of the Garnaut Review. This reflects an attempt to focus efforts on those areas where the Commission is able to add most value. Among other things, the submission does not consider in any detail:

- setting domestic GHG emissions targets — although some of the factors that should be considered in setting targets for Australia, such as the global nature of the climate change problem, are briefly considered
- design of a domestic ETS — as outlined by the Garnaut Review, the Task Group on Emissions Trading and the National Emissions Trading Taskforce (Garnaut 2008a; PMTGET 2007b; NETT 2006), there are many important issues to be resolved, but there is insufficient time to add usefully to the general points made in the Commission's submission to the Task Group (PC 2007a)
- climate change policies that are focused on objectives other than mitigation — brief comments on some of these are given in box 1.1.

1.2 Responding to a global externality

GHG emissions are an example of what economists call an *externality*. Those who emit GHGs derive benefits from doing so (for example, by being able to heat their homes), while part of the cost of emitting (that is, related to any resulting temperature increases) is imposed on the wider community. Emissions are higher than desirable because individuals and firms take into account net benefits to themselves, but not the broader social costs and risks. GHGs are an unusual example of an externality in that it is global — all emissions contribute to atmospheric concentrations irrespective of where they occur.

Box 1.1 Climate change policies focused on objectives other than mitigation

Research into climate change

Better understanding of the science of climate change and its likely impacts (including regional impacts) could potentially be of great value in developing GHG emissions targets and informing adaptation efforts. There is a clear case for governments, including the Australian Government, to fund research into these areas given the public good characteristics of the knowledge gained.[2]

Adaptation

If effective international measures are put in place to reduce GHG emissions this would be expected to reduce but not eliminate climate change impacts. Accordingly, adaptation to climate change is an important consideration under all likely future abatement scenarios.

Individuals and firms will seek to adapt to changes in the climate themselves. Government intervention may be warranted where there are market failures, such as information failures and public goods. Areas that may require government strategies include provision of regional climate information and land-use planning. Unlike mitigation, adaptation does not, in the main, require internationally coordinated action and so can be effectively pursued unilaterally.

Equity and structural adjustment

The costs of the ETS are likely to fall unevenly across regions and socioeconomic groups in the community. There is a role for governments to assist people least able to cope with these costs and adversely affected regions. In general, equity objectives should be met directly and in a way that does not interfere with the incentives to abate created by the ETS. For example, it would be preferable to provide cash payments, rather than discounts on energy bills, to low-income households.

Policy information and education

The community's understanding of emissions trading is likely to be generally quite low, given that Australia has had little experience with this policy instrument. Accordingly, there will be a need for the Australian Government to explain emissions trading and its role in meeting climate change objectives. It will also be necessary to explain the objectives themselves, including the importance of focusing on overall emissions (and emission reductions) rather than more tangible, but less important, outcomes such as the amount of energy provided by a particular low-emissions technology.

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2 Public goods are non-rivalrous (that is, consumption by one person will not diminish consumption by others) and non-excludable (that is, it is difficult to exclude anyone from benefiting from the good). Common examples include flood-control dams, national defence and street lights. Given that exclusion would be physically impossible or economically infeasible, the private market is unlikely to provide sufficient quantities of these goods.

There is a growing consensus that human-induced GHG emissions pose serious long-term risks and that action is needed to manage these risks. As it is a global externality, action to reduce emissions ideally would be taken at a global level. As there is no 'world government' to impose such a solution, international action needs to be based on the voluntary participation of almost 200 sovereign nations. Achieving such broad participation has proved elusive to date and is likely to remain very difficult for the foreseeable future.

The exclusion of major emitting countries from international action increases the cost of achieving a given level of abatement. This is because low-cost abatement opportunities in the excluded countries can not be accessed and must be substituted for by higher cost opportunities elsewhere. Stringent abatement targets are difficult, or impossible, to meet if more than one or two major emitters are excluded. This is a function of the level of emissions in excluded countries and the potential for emissions to be displaced to those countries (for example, by aluminium smelting activities shifting from a country taking action to one not taking action).

GHGs are also what is known as a *stock* pollutant. It is not the quantity of emissions in any given year that influences mean global temperatures, but rather the stock in the atmosphere. As many GHGs have a long residence time in the atmosphere (carbon dioxide, for example, remains in the atmosphere for up to 100 years), emissions now can continue to influence climate for many decades.

This attribute of GHGs partly explains why climate change is such a long-term issue. Atmospheric concentrations have been increasing for many decades and if no effective international action is taken to limit emissions, the concentrations would be expected gradually to accelerate, with consequent implications for temperatures. The damages expected from climate change are linked with possible temperature increases, which are expected to increase gradually under business-as-usual emissions. For example, in the most pessimistic scenario modelled for the Stern Review, mean damage costs reach 1 per cent of global gross domestic product around 2070 but continue to increase, reaching 13.8 per cent in the year 2200 (Stern 2007).[3]

The stock pollutant nature of the problem is very important in considering the international policy response to climate change. It implies that a given target for atmospheric concentrations of GHGs could be achieved via different emission paths. For example, strong action to ensure global emissions peak by 2020, followed by fairly gradual absolute reductions could achieve a similar result to allowing emissions to peak in 2030 and then

3 These estimates include the following types of damages: market impacts (such as reduced agricultural production), risk of catastrophic events (low-probability abrupt changes to the climate system) and non-market impacts (such as damage to the environment and human health).

cutting emissions more steeply. Ideally, once a target for atmospheric concentrations was established, the aim would be to follow the emission path that achieved the target at the lowest possible cost.

Australia's current policy situation

Climate change policy in Australia has developed as a patchwork of measures targeting particular sources of GHG emissions, including in individual states and territories. At the outset the focus was on measures that were expected to have no net cost (so called 'no regrets' measures). The underlying logic was that costly action by Australia in isolation was not justified because the problem was a global one, requiring a global response.

Over time, however, measures that impose a net cost on the community have been adopted. In addition, some measures conceived as fitting the 'no regrets' criteria appear to have been pushed beyond their original intention, imposing costs on individuals and firms (PC 2005). The current patchwork of policies has resulted in some relatively high-cost abatement opportunities being taken up while many lower-cost abatement options remain unexploited.

At the international level, the United Nations Framework Convention on Climate Change (UNFCCC) has been ratified by 190 countries (including Australia), making it one of the most widely supported international agreements in existence. The UNFCCC's ultimate objective is 'to achieve … stabilisation of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (UNFCCC, Article 2). The UNFCCC does not specify an overall target or time paths for emission reductions or binding targets for individual countries. This leaves any binding commitments on GHG emissions to be negotiated among parties to the UNFCCC. The first attempt to do this was the Kyoto Protocol negotiated in 1997.

The Kyoto Protocol commits developed countries (or 'Annex 1' countries) to limit or reduce their GHG emissions during the period 2008–12. It does not impose binding targets on developing countries, but allows for their participation through measures such as the clean development mechanism (CDM). The CDM allows Annex 1 countries to fund emission reduction activities in developing countries and count these towards meeting their own target.

Australia ratified the Kyoto Protocol in December 2007, leaving the United States as the only Annex 1 country not to do so. The Australian Government has also stated that its 'position is that any binding commitments need to encompass both developed and developing countries if we are to be successful in tackling climate change' (DCC 2008c). A reasonable interpretation would seem to be that the Australian Government recognises that the Kyoto Protocol is deficient in that it does not include binding targets for

developing countries, but sees it as a useful (and perhaps equitable) step along the way to a more comprehensive agreement.

Australia's target under the Kyoto Protocol is to limit GHG emissions to 108 per cent of 1990 levels between 2008 and 2012. It is projected that this target will be met (DCC 2008e).

International negotiations on a climate change agreement for the post-2012 period are underway and, at the earliest, will be completed toward the end of 2009. The current policy development process in Australia, of which the Garnaut Review is an important part, is centred on the planned introduction of an ETS in 2010. With these timelines, decisions with far-reaching consequences for Australia's future will need to be taken before the outcomes of the international negotiations are known.

1.3 Framework for supplementary policy

For this submission, it is taken as given that targets will be set for Australia's GHG emissions and that the main policy instrument used to achieve these targets will be an ETS. To understand the role that supplementary policy should play in this context, it is necessary first to understand the role of targets and an ETS.

Targets

Good practice policy principles would require that targets for GHG emissions be set based on the costs and benefits of constraining emissions to various levels. The costs to be considered include those associated with:

- generating energy using low-emissions technologies that are more expensive than the main technologies currently in use
- adjusting to changed circumstances as industries and jobs are lost in particular regions and new opportunities arise elsewhere
- forgoing services in order to conserve energy (for example, putting up with a less comfortable living environment in order to save on energy for heating and cooling)
- administrative and other requirements that arise from whatever policy instruments are put in place to achieve the targets.

Various studies suggest that Australia's mitigation costs are likely to be higher than those in most other developed countries, reflecting Australia's economic structure, which is based on the availability of low-cost fossil fuels (Ahammad et al. 2006; Weyant and de la Chesnaye 2006). The costs to Australia would also vary according to the extent of mitigation in other countries. This variation, however, is subject to countervailing

influences and so it is not clear whether the overall cost would be higher if a given level of Australian action was beyond that, or in step with, average international action (PC 2007a).

Ultimately, the benefits from reducing emissions are avoiding some of the expected risks and damages of climate change. To some extent these risks vary by country and region. Potential impacts identified for Australia include:

- increased water security problems in southern and eastern Australia
- risks to coastal development from sea-level rise and coastal flooding
- loss of biodiversity in ecologically rich sites (including the Great Barrier Reef, Queensland Wet Tropics and Kakadu wetlands)
- risks to major infrastructure from extreme events
- decline in production from agriculture and forestry (IPCC 2007).

Overall, these damages, and hence the benefits from mitigation, might also be higher for Australia than for most other developed countries (Garnaut 2008b).

As explained earlier, any benefits to Australia would arise overwhelmingly from abatement undertaken in other countries. Australian abatement on its own imposes costs on the Australian community for little or no climate-related benefit. It is for this reason that the Commission has argued that Australian action needs to be calibrated to the prospect and nature of an international response (PC 2007a). This raises particular challenges, given the timelines for international negotiations and the Australian policy development process outlined earlier.

The Australian Government has committed to reducing GHG emissions by 60 per cent from 2000 levels by 2050 (and also plans to set interim targets) (Wong 2008). A crucial question is the international circumstances under which this commitment would apply. In its early reports, the Garnaut Review favoured setting out different GHG emission trajectories (and targets) that would apply under different levels of international abatement (Garnaut 2008a). If this approach is pursued, it is important that each conditional commitment be carefully thought through, considering the likely outcomes for Australia if it were to be sustained over the long-term.

Another issue for the setting of targets is the time period over which they will apply. From the earlier discussion of the stock pollutant nature of GHGs, it would be desirable to set a single target for total emissions over a multi-decade period. However, this conflicts with current practice under the Kyoto Protocol, and the inevitable desire of the international community to see that progress is being made in particular countries and that commitments made are being honoured. Accordingly, the degree of flexibility Australia might have under a future international agreement to specify targets in the form it would like is unclear.

Emissions trading scheme

As governments do not control emissions directly, the obligation for meeting any target that is set must be passed down to the community using a policy instrument. The two main instruments that have the potential to be relatively cost effective are emissions trading and emissions taxes, because they price GHG emissions directly. The Australian Government has chosen to use emissions trading and plans to introduce an ETS in 2010. Many important design issues are yet to be resolved.

An ETS allows whatever targets are set to be achieved, but the more stringent the target the higher the unit cost of achieving those emission reductions. Essentially under an ETS, whenever a quantity of GHG is emitted, permits for that quantity must be surrendered to the administrator of the scheme. The target determines the number of permits, which in turn determines the quantity of emissions (provided that measurement and verification arrangements are adequate). There are, however, two qualifications:

1. If an ETS includes a 'safety valve' price, emissions can exceed the target under certain conditions.
2. Where an ETS excludes some sectors of the economy, the target may not be met if emissions growth in these sectors is higher than anticipated (this issue is discussed in more detail in chapter 3).

With a target set below the quantity of emissions that would have occurred without the ETS, there will be scarcity in the market for permits. This results in permits, and therefore emissions, having a positive price.

Under an ETS, firms can choose to reduce their emissions and invest in abatement options and/or purchase emissions permits (the right to emit) which are traded on the market. Firms will tend to invest in abatement to the point where abatement costs are equal to the cost of permits. By enabling firms with access to lower cost abatement opportunities to reduce their emissions, and firms with high abatement costs to purchase permits and continue to emit, a fixed GHG emissions cap can be met at the lowest overall cost to the community. In addition, an ETS also increases the incentive for firms to invest in the development of low-emissions technologies.

The ETS also influences the purchasing decisions of consumers and producers indirectly through the permit price. An ETS will make energy more expensive, increasing the incentive for people to conserve energy and seek out goods with higher levels of energy efficiency. In addition, goods that are energy intensive to manufacture will become relatively more expensive and so people will tend to buy less of them.

What role for supplementary policy?

From the preceding discussion it might be asked: If an ETS has the potential to enable GHG emissions targets to be met at least cost, why have any other mitigation policies?

Indeed, in many contexts where an ETS is used, this is exactly what is done. For example, an ETS has been used to achieve targeted reductions in sulphur dioxide pollution in the United States. It has been estimated that using an ETS instead of (rather than in concert with) other policy instruments, such as regulating that particular pollution-control equipment must be used, has resulted in annual cost savings of up to US$1 billion (Stavins 2005).

That said, there are legitimate reasons for having some carefully designed supplementary policies for GHG mitigation. However, before discussing these, some other rationales that are often suggested, but which have less merit, are considered.

Weak rationales for supplementary policy

The size of the task dictates that many policies need to be deployed

Meeting the target proposed by the Australian Government, or the more stringent ones discussed in Garnaut (2008b), would be an enormous task. There is, however, nothing inherent in the size of the task that requires other mitigation policies to be used in addition to an ETS. An ETS is an instrument that has the potential to achieve whatever targets are chosen, at least cost. With more stringent targets, costs to the community will be higher. The magnitude of these costs has the potential to moderate the targets set. Consequently, the choice of an ETS does not limit how ambitious the targets can be. Indeed, because the ETS is more cost-effective than most alternative instruments, more ambitious targets can be achieved for a given cost.

It is sometimes argued that climate change is such a large and complex problem that there can be no ‘silver bullet’ solution and so a wide range of approaches is needed. This has some validity in the context of the *technologies* that may be required to reduce emissions. However, the same argument does not apply to *policy*. Emissions trading and taxation are efficient policy instruments precisely because they can create incentives for emission reductions across the whole economy, involving a wide range of goods, services, activities and technologies. Importantly, unlike policies that target specific technologies, taxes and tradeable quotas do not distort technology choices.

An ETS will not achieve emission reductions quickly enough

There is a view held by some that whatever their advantages, market-based instruments such as an ETS are too slow in producing results (Environment Business Australia 2008). It is possible that this view derives from focusing on particular emitting activities rather than on total emissions. For example, it might be observed that an ETS has not caused coal fired electricity generation plants to shut down or that coal exports are continuing unabated, whereas a regulatory response could close plants and ban exports immediately. However, it seems likely that market-based instruments could achieve sharper reductions in *total* emissions than prescriptive regulation because they lower the costs imposed on the community.

An ETS could achieve rapid reductions in emissions if that is the policy objective and the targets are set accordingly. Again, it is the costs of reducing emissions sharply that would likely temper the emissions trajectory chosen, not the alleged limitations of an ETS.

Commitment to existing policies

Many existing climate change mitigation policies have been developed and refined over a period of years. Governments and government officials may consider that the considerable investment of time and resources spent developing these policies would be largely wasted if they were discontinued. With some policies there may also be a sense that they have worked well and so should continue.

The introduction of an ETS, however, fundamentally changes the policy landscape. Although some policies may have worked well in the past, it would be fortuitous if these effectively supplement emissions trading. In many cases, retaining then will simply add to the costs of achieving GHG emissions targets.

Extra policies are needed during the transition to a credible ETS

It has been suggested that it will take time to establish the credibility of an ETS and that supplementary policy should be used as a transitional tool to try and compensate for this (Stern 2007). This could be done, for example, by regulating to prevent the construction of buildings that are energy inefficient and which would not be built if the ETS-related increases in energy prices expected by policy makers were factored into the building's design.

While this argument has a coherent underpinning, it is the Commission's view that it is likely to have no useful application in the Australian context because:

- steps can be taken to reduce any such credibility problem

- there is little likelihood that policymakers would be able to correct for any deficit in credibility in a way that produced more benefits than costs.

Establishing the credibility of the forward path for emissions prices is widely seen as of central importance to the cost effectiveness of climate change mitigation policy (Helm, Hepburn and Mash 2003; McKibbin and Wilcoxen 2006; Stern 2007). If the ETS has high credibility and firms expect that emissions prices will be stable, or increase over time as envisaged by policy makers, they will factor this into their decisions on investment in long-lived capital goods and research into low-emissions technologies.[4] If, on the other hand, the ETS has low credibility (that is, people expect the scheme to be rescinded or watered down in the future), firms will tend to focus their abatement on activities that have a short time horizon. In addition, if the ETS allowed flexibility as to the timing of permit use, firms may not, in the early years of the ETS, reduce emissions by as much as they would if the scheme had high credibility.

If low credibility were expected to occur, there could well be reasons for thinking that the abatement resulting from an ETS would be of the wrong character (that is, insufficiently focused on transforming long-lived capital goods). This gives rise to an argument for a greater role for supplementary policies in the initial years of an ETS, while the credibility of emissions prices is being established. For example, the case for a renewable energy target as a transitional policy has been argued on this basis.

Whether a gap between the forward emissions price path envisaged by policy makers and the price path private agents factor into decision making might warrant a greater role for supplementary policies in the early years of an ETS depends in part on the reason for the discrepancy.

- If private agents think that major technological breakthroughs that will greatly lower the cost of achieving emission reductions are imminent, the gap may simply reflect the market having access to better information and no enhanced role for supplementary policies is warranted.
- If, on the other hand, the departure is due to low credibility because of a view that future governments are likely to water down or dismantle the ETS, a case for an extra role for supplementary policies during the transitional phase can be argued.

Attention should be given to setting targets and designing the ETS in ways that promote credibility, while allowing for flexibility in response to new information (for example, on climate science or the degree of international mitigation). One way of doing this is to set out in advance how targets will be revised in response to changed circumstances. The

4 Firms would be expected to begin to build future emission prices into their decision making before the ETS was actually introduced. This process would be expected to gain momentum once the major design features of the ETS were finalised, as this would allow informed expectations about emissions prices to be developed.

institutions set up to administer and regulate the ETS are also important to the level of credibility of the scheme (Helm, Hepburn and Mash 2003).

Australia would appear to be in a relatively good position to establish a credible ETS. The policy process being followed has gained insights from analysis and stakeholder consultation, conducted by the National Emissions Trading Taskforce, the Task Group on Emissions Trading, and now the Garnaut Review. Lessons have also been learned from the experiences of others in establishing an ETS, in particular the European Union. In addition, Australia has a demonstrated record in establishing independent institutions, such as the Reserve Bank of Australia and the Australian Competition and Consumer Commission.

If, despite this, there is still expected to be some deficiency in credibility, the question becomes whether giving an enhanced role to supplementary policies to compensate would be likely to produce greater benefits than costs. It is important to recognise the amount and quality of information that policy makers would need to be able to do this. First, they would need to estimate the forward emissions price that they think should be factored into investments in long-lived capital goods. Given that lack of credibility is not the only reason for discrepancies between the expectations of policy makers and firms, this is very difficult. Second, they would need to second-guess how firms would have responded to this forward emissions price and design policy interventions accordingly. It would seem unrealistic to expect that these information requirements could be met.

It should also be recognised that the use of supplementary policy can itself compromise the credibility of the ETS. As explained in box 1.2, supplementary policies can decrease the ETS permit price. If supplementary policies were used heavily in the initial years of the ETS and firms considered that this was likely to continue, then expected future permit prices would tend to be lower than they would be otherwise.

In the Commission's view there is little or no scope to use supplementary policy to compensate for any deficiencies in the credibility of an ETS.

Stronger rationales for supplementary policy

An ETS will address the GHG externality for those sectors covered. For these sectors, supplementary policies may be warranted where they address a different source of market failure. The most significant related market failure is the spillover benefits that can arise from the development of low-emissions technologies. An ETS will create incentives for the development of low-emissions technologies, but these are likely to be inadequate given that innovators often can not capture all, or even most, of the benefits they create. There are also information-related market failures that can cause people to fail to take up energy efficiency opportunities that would have been cost-effective for them. These issues are taken up in chapter 2.

For sectors not covered (potentially including agriculture and forestry), the GHG externality will not be addressed by the ETS. There is, therefore, a prima facie case for investigating supplementary policies that provide incentives to abate in these sectors that are commensurate with those created by the ETS for covered sectors. Chapter 3 examines factors relevant to the coverage of an ETS and the various policy options that could be pursued for excluded sectors.

The existence of market failure does not automatically mean that a government response is warranted. The likely effectiveness of the response and the costs associated with it need to be assessed to determine if there are likely to be net benefits to the community from adding a supplementary policy.

In assessing costs and benefits it is important to recognise that, for covered sectors, the benefits from supplementary policies are unlikely to come in the form of extra emission reductions. Under a 'pure' ETS the quantity of emissions is fixed and so other mitigation policies (unless on a scale that makes the ETS redundant) may change the composition of abatement but will not change total emissions (box 1.2). For example, energy efficiency policies might increase the abatement from higher energy efficiency, but there would be an equal decrease in abatement elsewhere. For example, there could be less switching from coal generated electricity to lower emissions technologies, such as gas. If the ETS allows flexibility as to when permits can be used, there is also some potential for supplementary policies to influence the timing of abatement (this issue is discussed in appendix A).

Some proposals for an ETS (including those from the Task Group on Emissions Trading and the National Emissions Trading Taskforce) are not 'pure' in the sense that they include a safety valve price on emissions permits. This means that should emissions reductions be more costly to achieve than anticipated in a particular year, some firms would choose to emit in excess of their permit holding and pay the safety valve price on the balance. Accordingly, the emissions constraint under the ETS may not be binding in some years, leaving open the possibility that supplementary policies could result in extra abatement. This, however, seems to be a fairly minor departure from the general rule that supplementary policies will not result in extra abatement, because the safety valve price may rarely if ever come in to play. Moreover, the final design of the ETS has not been determined — it may not include a safety valve price, or include one only in the initial years.

More importantly, a safety valve price is a deliberate mechanism to cap the cost of emission reductions. If a supplementary policy were to result in extra abatement at a unit cost above the safety valve price, then it would defeat this intention. Accordingly, supplementary policies are unlikely to result in net benefits from extra abatement in covered sectors.

The quantity of abatement in excluded sectors will not be fixed and so supplementary policies here can reduce total emissions and, thus, contribute toward meeting national emissions targets. The size of this contribution should depend primarily on the potential for relatively low-cost abatement in these sectors and the policy-related costs of achieving abatement.

In summary, the main justification for supplementary policy is where it would lower the cost of abatement. This could occur, for example, where:

- an energy efficiency policy corrects an information failure, encouraging the uptake of cost-effective energy efficiency opportunities (care needs to be taken to ensure that all costs associated with the policy are taken into account in determining whether lower abatement costs are likely, as discussed in chapter 2)
- policy to support the development of low-emissions technology is successful in stimulating innovation that leads to abatement costs being lower in the future
- supplementary policy in uncovered sectors is able to exploit low-cost abatement opportunities, with reasonably low transaction costs.

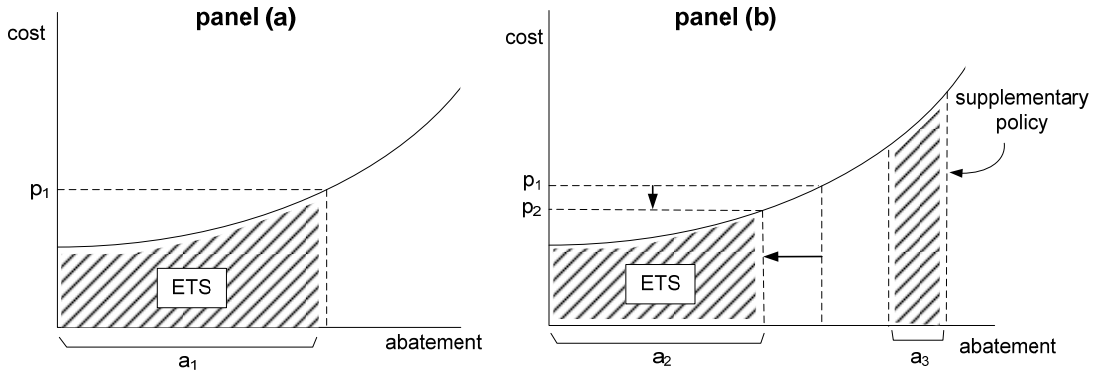
Box 1.2 Why supplementary policies do not generally reduce emissions

Consider the case of an ETS that covers all sectors of the economy, does not allow banking and borrowing of permits and does not have a safety valve price on emissions. Under such an ETS a set number of permits are issued and the emissions allowed under these permits add up to the emissions target. Because the target is set below the level of emissions that would have occurred without the ETS (business-as-usual), the permits are scarce and, therefore, valuable. This means that a firm that has more permits than it needs would be expected to sell the excess to a firm that will use them. Accordingly, the emissions each year would equal the emissions target.

The important point about supplementary policies is that they do not alter this outcome, unless they cause so much abatement that there is no longer any scarcity of permits, and the permit price drops to zero. If supplementary policies of this magnitude were contemplated there would, of course, be no point in having an ETS.

What supplementary policies of a realistic scale would do is reduce the abatement task required of the ETS. That is, the gap between business-as-usual emissions and the target becomes less than it would be without supplementary policies. Permits remain scarce, but are somewhat less scarce, and so the permit price is lower than it would be otherwise. Permits are still bought and sold at a positive price. All permits would be expected to be used and so total emissions still equal the target.

This is illustrated in the figure below. Panel (a) is for an ETS operating in isolation. The abatement required of the ETS to meet the target is 'a_1', which is achieved with a permit price of 'p_1'. The cost of abatement is given by the shaded area. In panel (b) a supplementary policy is introduced that achieves a quantity of abatement, shown as 'a_3'. The abatement required of the ETS falls by the same amount (that is, $a_1 = a_2 + a_3$), which causes the permit price to fall to 'p_2'. Total emissions, therefore, are the same with and without the supplementary policy.



(Continued next page)

Box 1.2 **(continued)**

In this example, the abatement achieved by the supplementary policy is relatively high cost and so abatement costs are higher with the supplementary policy (the two shaded areas in panel (b) added together is larger than the shaded area in panel (a)). Also, the figures do not capture administrative and some other policy-related costs. These will inevitably be higher where supplementary policy is used.

Another possible consideration is benefits other than a reduction in GHG emissions. For example, generating electricity from renewable sources rather than coal might result in less local air pollution as well as less GHG emissions. Where this argument is used, the non-mitigation benefits should be explicitly stated. For example, subsidies for the assembly of petrol/electric hybrid vehicles in Australia would need to be argued on grounds other than climate change mitigation.

Overarching design issues for supplementary policies

National coordination

A national ETS is being designed and it is also desirable that some types of supplementary policies be national or nationally uniform (a result that can be achieved through enacting template legislation across all jurisdictions). National uniformity is generally desirable where variations across jurisdictions would reduce cost effectiveness by:

- causing activities to locate away from their ideal location (for example, wind farms in less windy places)
- increase costs for firms that operate nationally (for example, requiring national firms to deal with jurisdiction-specific energy efficiency standards).

On the other hand, some measures, such as the provision of general information on energy efficiency, do not necessarily benefit from being nationally coordinated. Indeed, there can be benefits through jurisdictions pursuing different approaches and learning from one another's successes and failures.

Focusing on efforts that count towards meeting targets

If a new international agreement on climate change arises it will contain a set of rules for determining countries' GHG emissions. Such rules would cover what counts as emissions and the relative weighting given to each GHG. These rules would be applied to determine whether commitments made in the agreement have been met. It is important, therefore, that abatement efforts in Australia are attuned to these rules. There would be little point, for

example, in pursuing costly measures to increase carbon stored in soil (which results in less carbon dioxide in the atmosphere) if this did not count toward meeting commitments.

International agreements may also extend to aspects other than each country's GHG emissions. For example, support given to the development of low-emissions technologies might be another metric used to measure effort.

At this stage, the rules that may apply post 2012 are not known, and it can not be assumed that they will be the same as for the Kyoto Protocol. This uncertainty needs to be taken into account in designing supplementary policies.

International considerations

In considering the design of an ETS the Garnaut Review and others have given appropriate attention to international issues, including:

- the potential for so-called leakage, whereby emission reductions in Australia lead to emission increases in countries without an emissions constraint
- that Australian action that leads to emission reductions in other countries is equally environmentally effective as emission reductions within Australia.

These issues should also be considered in designing supplementary policies. For example, the potential for leakage to occur should be taken into account in designing policies for sectors not covered by the ETS.