



**The Australian
Gas Association**

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DOMESTIC EMISSIONS TRADING

**Submission to the Parliamentary Committee to Inquire into Trading
in Greenhouse Gas Emissions**

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Executive Summary

The Australian Gas Association (AGA) believes that the unique character of Australia's energy sector should be taken into consideration in the debate surrounding emissions trading at both a domestic and international level. Australia is a highly fossil fuel dependent nation, in both the generation of energy, and the processing of exports. In addition, Australia is one of few net energy exporting nations. These facts have many implications for the adoption of any greenhouse gas (GHG) emissions trading regime.

The gas industry is committed to the goal of GHG abatement. Natural gas is a clean burning fuel, and by increasingly meeting the need of consumers for economic and reliable energy, Australia's gas industry is already making a substantial contribution to GHG abatement.

Several models of emissions trading schemes exist, yet none are of the scale or complexity likely to be required for any domestic emissions trading regime. This means that many structural questions about how emissions trading would work, and the associated cost will remain unanswered until more detailed studies or trials take place. Nevertheless, some points may be addressed usefully.

The AGA believes that the coverage of any emissions trading regime ought include all substantive greenhouse gas emissions. This would ensure the most efficient reduction of greenhouse gas emissions by reducing the marginal costs of abatement. Any arbitrary exclusion of large areas of carbon emissions would prevent the widest possible range of cost-effective abatement measures being adopted.

In line with the Kyoto Protocol provision should be made for the inclusion of carbon sinks in emissions trading. Carbon sinks increase the flexibility and reduce the costs of GHG abatement, as well as representing a possible source of exports or credits in any international emissions trading regime.

Emissions trading permits ought to be issued for relatively long durations, to enable a greater flexibility in industry adjustment to abatement targets. This has the potential to allow technology based solutions and fuel switching to become more widely available to permit holders.

Initial allocation of permits should not be based on the international baselines contained in the Kyoto Protocol. This would be an arbitrary and distortionary basis upon which to calculate GHG emissions, and potentially severely impact investment and business decisions.

Any initial allocation of permits, or operation of the emissions market, must not be exploited by governments for revenue purposes. Allocation must be fair and equitable, promote efficiency and not introduce distortions into the wider economy. The AGA strongly holds that only free allocation of permits on the basis of past use and fair 'new entrant' provisions achieves these objectives. Once allocated, permits should be treated and regarded by governments and markets as property rights.

In order to be an effective response to GHGs, an emissions trading regime must incur the minimum possible transaction costs. Administration of the regime ought to be left, if possible, in private hands. Compliance and verification measures must likewise not impose costs upon market participants which make the regime inefficient.

Finally, a regime must recognise the development of any international trading schemes. Allowance should be made, if possible, for an interaction to occur between the two regimes. This would need to be on the basis, however, of arrangements that give explicit recognition to the global benefits of Australian based value-adding processing. An example of this is the reducing of CO₂ emissions in countries purchasing Australian liquefied natural gas (LNG) exports. The production of LNG involves emissions within Australia, which are more than offset by a reduction in other nations' greenhouse gas emissions.

Rationale and Aims

Background

Australia played a significant role in the agreement at Kyoto to adopt binding emission reduction targets under the Framework Convention on Climate Change. (FCCC) When the Kyoto Protocol enters into force, nations ratifying the Protocol will be required to adopt policy measures which will enable them to meet targets agreed to in Kyoto. To satisfy its target of restricting emission increases to 8% over 1990 levels, Australia will need to go significantly further than so-called 'no regrets' measures. The development of a national emissions trading regime has been mooted for some time as a possible policy response to the need for emissions abatement.

Policy Options for Emissions Abatement

Broadly, governments have at their hands three different mechanisms for achieving policy outcomes:

- command and control measures;
- market-based instruments; and
- voluntary arrangements and information dissemination.

The strategy to be adopted will depend primarily upon the degree of available knowledge about the method to achieve the desired outcome. In circumstances where knowledge levels are low, as is the case in the area of the marginal abatement costs of GHGs, market-based instruments are more desirable than command and control measures because they spread the ‘risk’ of the imperfect knowledge amongst private market participants, and more accurately define the marginal abatement costs. In relation to the energy sector, this theoretical rationale is supplemented by other factors which favour the adoption of an energy sector sensitive trading regime.

Market based measures provide incentives to develop innovative methods of meeting abatement targets over time. An emissions trading regime which ran over several decades would allow optimum lead times for the development of least cost GHG abatement solutions. Also, the market orientation of the regime, and participation in it by individual companies means there is a greater likelihood of commercial investment in abatement technology and strategies, which would be less disruptive than either ‘command and control’ measures such as taxes, or distortionary strategies, such as government subsidies. Finally the commercial development of ‘green technologies’ might enable the evolution of a potentially rewarding export market in cost-effective abatement solutions. All of these results are desirable from the point of view of Australia, and the energy sector.

The third option, involving voluntary arrangements and information dissemination, has played a significant role to date in Australia’s response to GHGs. It will be noted that the AGA has consistently been an advocate of, and played a facilitative role in, innovative voluntary arrangements between industry and government. A successful example of this has been the Greenhouse Challenge Program. These arrangements should continue to be encouraged in parallel with any emissions trading regime, as a means of sharing information on cost effective mechanisms for reducing Greenhouse gas emissions. Moreover, voluntary participants in the current Greenhouse Challenge Program, should not be disadvantaged by any emissions trading arrangements which may be implemented in due course.

Models and Benefits

Despite the fact that a emissions trading regime is more likely to produce least cost marginal abatement, the efficiency of this measure would be greatly increased were an international emissions trading scheme to be adopted. The Organisation for Economic

Cooperation and Development (OECD) estimates the cost of GHG abatement might be lowered 50% if an international emissions trading regime were in place.¹ Given the current lack of details on how such a regime might operate (although it was agreed at in the Kyoto Protocol that one would be developed) these benefits will probably have to be foregone for some time. In pursuing the development of an international emissions trading regime, it is vitally important that Australia's particular concerns, and unique energy circumstances are recognised. Also, in order to achieve an efficacious regime, it is important that it include developing countries. Indeed, as industrialisation in these countries accelerates, their involvement will be critical for international emissions trading to be viable. It is estimated that by the year 2016, developing countries will account for over half of global GHG emissions.

There are several operating emission trading schemes that provide possible models for a domestic emissions trading regime. The NSW electricity sector requires emission benchmarks to be met under the terms of electricity licenses. In the United States there is substantially greater experience with emissions trading regimes. A sulphur dioxide trading scheme has operated for some years, which might possibly provide valuable information to consider in the light of a domestic emissions trading regime. Further study of the operation and general effects on both of these regimes would have to be undertaken before the AGA could assess their usefulness as possible models.

Emissions trading may facilitate market based improvements in power generation in line with initiatives outlined in the Prime Minister's Greenhouse Response Strategy. As with all such arrangements though, an exact assessment of the possible effects of an emissions trading regime, and thus the final position the AGA adopts towards it, cannot be determined until further details are developed.

Issues in Emissions Trading Regimes

Coverage

Ideally, to achieve the greatest efficiency, an emissions trading regime would cover all sources of GHGs. However, this is difficult from a scientific and practical standpoint. On present technology, recording emissions from some GHGs is an impractical proposition, and would involve greater inefficiencies and transactional costs than would be compensated for by the increased efficiency of the regime. Distortions will be introduced in any regime in which not all substantial sources and sinks are included. The aim should be the maximum practical inclusiveness with reference to cost and the level of scientific reliability. Thus any emissions trading regime ought to include all

¹ *Framework for Greenhouse Emissions Trading in Australia*, Industry Commission Staff Research Paper, December 1997, p.ix

GHGs covered by the Kyoto Protocol, and all substantial emissions sources and carbon sinks.

Given the levels of uncertainty and need for further scientific knowledge, it may be wise to provide for the future integration of other more difficult to measure emissions sources and sinks. One means of including these at present problematic sources and sinks would be to attach a lower permit value to their effects on overall emissions. In effect this would discount the value of these sources and sinks because of their less accurately measurable influence.

Permit Duration

The time period over which an individual emissions permit operates is a matter of importance in arriving at the most cost effective abatement solution. A permit of limited duration would increase the transaction costs for all emissions market participants, while restricting the saleability of permits and the ability of emitters to develop long term strategies for managing their emissions.

By contrast, permits of longer duration encourage market planning, and the adoption of more far-sighted emission abatement programs on the part of industry. Similarly, longer duration permits allow for a greater degree of industry adjustment to take place, which might facilitate structural changes to the way emitters behave, rather than merely imposing an extra market based cost on their activities. This option also encourages the emergence of flexible market based responses to abatement. As a further advantage of this path, the AGA believes that longer permit durations will enable a short term deferral of emissions abatement until low cost (and possibly more effective) abatement technology reaches the marketplace. This is necessary due to the long lead times typical in the development of such technologies.

Permit Valuation Base Year

The emissions 'value' (ie the measure of emissions unit which one permit might represent) is a matter which will only be significant in as far as manageable and efficient unit sizes are ensured, which is in the interests of all concerned.

A decision on the overall emission cap, and the base year of calculation of emissions, is critical to the AGA's members. An emissions cap which was set too low (eg retrospectively) would involve some sections of the energy sector being required to undertake potentially expensive permit purchasing almost immediately, thereby reducing investment opportunities, employment, and perhaps total economic growth. The overall emissions cap must be sensitive to and recognise Australia's unique energy export sector, and the integration of many high GHG emitting activities in mineral

exporting activities (such as Australia's world class Aluminium smelting plants and direct reduction iron ore facilities which provide global greenhouse benefits). Similarly, the production of LNG, which produces net GHG benefits in the export markets in which it is used, nevertheless involves significant levels of emission in Australia.

Alteration of Permits

There are three possible methods for altering permit terms, or the number of permits available in an emissions market:

- natural expiration at end of permit period;
- market participation by a central body (for example, 'buy-backs' of credits); and
- issuing or repossession of permits, or alteration of permit terms.

The first option, offering market stability, certainty and predictability is the most likely to produce optimal marginal abatement, through the development of trust in the market's integrity by stakeholders, and the encouragement of other market mechanisms which reduce abatement costs (such as risk sharing, options and derivatives).

The second option, contemplating market participation by either a national government or some other form of non-corporate entity (such as a prospective emissions trading exchange), is preferable to direct interference by government in permit terms or prices, but still has the potential to disrupt pricing information. It would do this introducing perceived values such as the desirability of further emissions reductions beyond those incorporated in the regime. The value which such intervention may place on emission permits would not equate with the cost of marginal emission abatement, which is the cost which establishment of the market is designed to ascertain. This dissonant price information would adversely affect the efficiency of the market's operation, altogether undermining the reason for adopting such an approach. Any market participation by government must occur on the basis of competitive neutrality.

The third option is unpalatable for any market participant, and would undermine the value of moving towards market based mechanisms. As noted, for the market in tradeable emissions to develop fully and most efficiently, a degree of certainty and predictability is necessary. As such, random intervention in the permit market, or the significant alteration of permit terms during their life would be strongly resisted by the AGA. The mandatory repossession of permits (or scope for that action to take place) would result in a regime arguably worse than the most regressive 'command and control' measures. Offering terms of compensation would not redress inefficiencies

arising from an inability of emitters to plan longer term abatement measures, making this option highly undesirable.

The permit ought, in order to support its market value and the development of an effective market mechanism, be viewed essentially as a property right. Transferability and non-interference by external forces ought therefore to be principles at the core of an emissions permit. Arbitrary interference would compromise the essential rationale for adopting a market based system, by removing certainty from market transactions. There are also three other practical issues in any alteration of the terms of permits or overall emissions cap which would need to be carefully considered:

- there would be substantial resistance from permit holders to change in the emissions cap, due to the necessity of emissions in the carrying out of their particular economic activity
- permit holders, considering the emissions permits they hold as property rights, would demand compensation for any alteration of those rights, and resultant economic loss
- raising emissions targets above those adopted at the initial stages of the regime would meet opposition from permit holders seeking to preserve the value of permits already issued

The gas industry would prefer to have a predetermined path of emission abatement decided upon from the outset. This would encourage the longer term investment decisions necessary for gas projects to proceed. Having the best possible market information available to all participants will, in any case, ensure the most efficient outcome across the economy, and achieve the optimum emission abatement costs. Part of the reason for this is that sophisticated market mechanisms can develop, eg emissions traders, brokers, options etc. It is important that this development takes place unfettered by bureaucratic control or artificially created market instruments.

Permit Definition

Within the issue of permits is a question of what actually an emission permit should allow. That is, whether 'end use' emissions ought to be included in value and scope of the permit. For example, this would be analogous to petroleum producers buying permits which accounted for the motor vehicle emissions which their product would create, as well as emissions from the refining process itself.

The gas industry would not support such an approach. The costs which it would impose upon all areas of the energy industry would distort investment patterns, and be impossible to equitably pass on to consumers, even assuming this was a desirable outcome. At whatever level it was borne, the cost of buying permits for the use made

of the energy that the gas industry produces would impose a massive financial burden, which would have a negative impact on investment, employment and economic growth. Moreover, the energy supplier has no direct control over the 'end use' of the product, and abatement strategies.

It is inevitable that some 'end use' emissions will remain out of the scope of permits in any initial regime of emissions trading. This is due to practical and scientific limitations. An important principle is that energy producers ought not be arbitrarily affected by the use customers decide to make of the energy they provide. There is a complicating factor of highly seasonal demand in the gas industry, and levels of uses which vary from season to season, as in the residential market. Incorporating this within an emissions trading regime would be extremely difficult and potentially distortionary.

Finally, the AGA would hold it as critical to the achievement of Australia's Greenhouse obligations that within any regime designed to reduce emissions, there is strong recognition of the value in switching to more greenhouse friendly energy sources, including natural gas

Market Participation

Which groups, institutions or private players will be able to participate in any regime of emissions trading is a significant issue. The relative benefits and costs of each potential players involvement in the emissions market must be assessed in order to answer the question of just who should have entry into the market. Participants might include low cost emitters who are not covered by an emissions trading regime or non-emitters who might 'earn' saleable permits by carbon sequestering activities (such as the operation of carbon sinks). Third-party traders in credits might buy, sell or hold permits, and it is possible to see a relatively developed market of brokers, dealers and investors emerging. It is also possible to allow public interest, environment groups etc. to purchase emissions permits if they consider it a desirable and cost effective way to reduce emissions.

Extra players within the emission trading regime will add to the flexibility and diversity of solutions to meeting GHG abatement targets. In the case of emissions traders or investors, each may offer a different type of service, and allow a more efficient overall result by their combined participation. It is conceivable some elements of the gas industry might be interested in becoming active market participants, in addition to purchasing the compulsory permits required to cover their operations. For example, retailers might become energy traders, encouraging customers to switch to gas (for example, by offering gas related services in exchange for permits).

Allocation

Initial allocation of emissions permits would need to meet several objectives. It would need to be fair and equitable, and allow the optimum emissions abatement outcome in the most economically efficient manner. Finally, any permit allocation ought not introduce economically distortionary forces into the wider economy.

For this to be achieved, initial allocation must be free, and calculated on the basis of past and projected emissions levels. Any allocation which does not recognise the existence of a prior property right, ie to consider emissions as a externality, is effectively depriving emitters of a previously enjoyed right without the ‘just compensation’ which the Australian Constitution requires.² The abatement of GHG emissions is a national responsibility, and will require a continuing national response. Any regime which unfairly burdens one section of the Australian community with the costs of this response is a negation of this fact. Given that a wide range of energy users will inevitably bear large costs in the meeting of GHG outcomes, it is reasonable for it to expect some degree of support and compensation from the wider community. Free allocation of emission permits provides an appropriate mechanism for delivering compensation for the undue impact of Australia’s commitments on the energy sector.

Economic analysis supports the view that regardless of the initial value of emissions permits, the operation of the trading regime ensures that permit costs soon reflects the marginal costs of abatement.³ That is, whatever initial allocation is decided, the same efficient result is reached. This means that any charge or price imposed by government on the issuing of permits would be purely a revenue measure. The AGA strongly opposes what would amount to an increase in taxation on the energy sector. By being a transparently revenue collecting mechanism, allocation on this basis would undermine the environmental credibility of the regime. AGA would submit that any allocation method which merely raises revenue without improving environmental outcomes ought not be considered.

An exception to the evidence that regardless of the initial method of allocation an efficient result is reached is where the allocation differs substantially from historical emission patterns. That is, when the initial allocation of permits least reflects the desired permit holdings of potential emitters. In this case inefficiencies arise from the possible exercise of market power by those possessing the permits, and the high transactional costs from a large volume of permit sales.⁴ That is, the more permits that are required to be bought by emitters who have not been allocated them freely, the

² s51(xxxi)

³ Montgomery, D. *Markets in licenses and efficient pollution control* in *Journal of Economic Theory*, vol.5, p.396

⁴ Hinchy, M et al. *Emissions Trading in Australia: Developing a Framework*, ABARE Research Report, 1998, p.24

greater the transactional costs. These heightened costs will be added to the marginal costs of abatement, making the overall trading regime less efficient, and imposing unnecessary costs to all market participants.

Allowing emission abatement in the most efficient manner is the key objective of an emissions trading scheme. As noted, this is achieved by free initial allocation. However, auctioning permits, an attractive option for raising government revenue, does not achieve the same. Auctioning permits would mean that initially few outside traders (because of the high capital costs) would be likely to participate in the emissions market, thus undermining its efficient operation. A perhaps more reasonable proposal is to distribute permits on the basis of the marginal cost of abatement. On present scientific and economic knowledge, however, this is extremely difficult to calculate and uncertain. Once again, it is worth noting that even this allocation method would not ultimately lead to a more efficient outcome, for with any system of allocation prices will soon reflect the marginal cost of abatement. An attempt on the part of government to estimate the value of emissions represents a significant assignment of risk by the government, to the possible detriment of private industry.

Any method of permit allocation should attempt to minimise distortionary effects flowing into the wider economy which affect past and future economic decisions. The auctioning or selling of permits particularly has the potential to produce distortionary impact retrospectively. This is because it would produce retrospective impacts on the margins and rationale of business investment which was already committed to or actually made. Major numbers of emitters have arguably already calculated the profitability of large projects with long lead times on the basis of 'zero-cost' emissions. Rapidly locating the capital to bid for permits might also be difficult for emitters, and result in large scale diversion from investment, with attendant falls in employment and economic growth levels.

To meet the three objectives identified for any system of permit allocation, a key issue is the baseline from which period allocations are calculated. This a matter of the highest importance to the energy sector. The preferable method for distribution of permits is a 'grandfathering' system. This would account for long term projects and their predicted emissions, which have been under development on the basis of GHG emission being an externality. By setting the baseline years of calculation at, as an example, 2005-2015, this could be achieved. In addition to being arbitrary, any earlier baseline has the potential to impose highly variant costs on different sections of the economy. These variant costs would depend on rates of growth, technological change, and scope for efficiency improvements.

Allocation by means of baseline calculations, does, however, have drawbacks which would need to be overcome. The upper limit it would apply to 'free' (that is costless) emission growth might potentially act as a perverse incentive for growth in certain areas of the economy not subject to that limit. There is no efficiency rationale for this growth, which might eventually add extra costs to the Australian economy beyond that

of the limit itself. Thus some form of differentiated allocation between emitters is required. An integral part of any emissions regime would need to be scope for growth of industry, and fair treatment for the entry of new industries or enterprises. The construction of a model which would meet these concerns might well be extremely challenging. Finally, the allocation of permits which allow for economic growth, such as the four per cent target adopted by the Government, would be an absolute necessity.

Compliance and Verification

In any arrangements for ensuring compliance and establishing verification procedures it is recognised that there are no incentives for self-enforcement. Thus there is a need for a credible, cost efficient method of gaining adherence to any implemented regime. The minimisation of administrative costs for compliance and verification would be a high priority in any emissions trading regime. The gas industry would prefer a single point of emissions reporting, and an arrangement consistent with the 'light handed' regulatory framework under which the gas industry has successfully developed and delivered benefits to the Australian community.

An alternative option which is sometimes outlined but seldom detailed is to let the market bear the risk of non-compliance and costs of administration. This proposal would see the establishment of a centralised but private sector operated exchange, through which emissions permits might be bought and sold. Each permit would not necessarily be 'fungible', inasmuch as there would be no absolute guarantee that the permit would represent an actual reduction in emissions. Rather the market would pass judgement on the value of the permit based upon, for example, the relative veracity and accuracy of a particular nation's verification regime. Presumably, mechanisms of managing or reducing risk would then develop, such as private verification agencies or insurance arrangements. The market assigned values of these permits could then determine an 'exchange rate' of the number of permits of a particular nation needed to comply with permitted emissions levels.

Transparency of market information would be a crucial feature of administration of an emissions trading regime, and a tool to attaining the most beneficial results. This might be achieved, for example, by a internet site, or other forms of dissemination, which gives details of arrangements entered into between participants to buy or sell permits. This would ensure that the market in tradeable emissions was kept open and operated in the most competitive manner.

The actual scientific scheme of verifying that participants remained within their permitted level of emissions would be difficult and potentially costly to establish. It is difficult, given the uncertainties surrounding coverage and the administration of emissions trading, to assess what form of verification would be most appropriate. Presumably, due to the expense of monitoring technology, and the policy imperative of minimising verification costs, random tests and auditing would play a major role.

Market Mechanisms and Transaction Costs

The principal benefit of adoption of a market for tradeable emissions is its allowance of flexible, market based instruments which lead to more efficient and less economically disruptive emissions abatement. With little direct experience of these instruments before, their exact form defies prediction. However, some indications of the obvious and preferable instruments which might emerge indicate the advantages of a move to a tradeable emissions market.

The 'carrying forward' of unused emissions permits into another permit period is one example of the form of mechanism which might possibly develop in a market environment. This is a desirable option because it allows emitters to adjust their emission reduction paths over a greater period, for example, the entire business cycle. This can smooth out unnecessarily deleterious repercussions of adopting the emissions abatement target. Similarly, a scheme of 'borrowing' of permit allocations might be seen as preferable to penalties for emissions in excess of permit levels, which would most likely be seen as unduly punitive by emitters. This could be either from future entitlements or other market participants. Allowing 'borrowing' of permits would probably be an efficient option, though this would probably need some restrictions or monitoring to ensure that emission 'defaulters' did not emerge from excessive permit borrowings.

The development of a range of sophisticated market mechanisms would be of undoubted benefit to the operation of emissions trading. The use of futures or options have the potential to significantly reduce the marginal costs of abatement under an emissions trading regime. For example, they might serve as a hedging mechanism for companies wishing to undertake research into abatement technology.⁵ In the face of uncertainty as to the future costs of abatement, a company might simultaneously undertake research into emissions abatement technology, and buy and sell emissions futures on the basis of its estimation of the likelihood of being able to commercially market its technology.

Aside from the development of as efficient a system as possible of emissions trading - meaning the adoption of the least cost GHG abatement solutions, the AGA has no special interest in the precise form of exchange mechanisms which might develop. The widest practicable range of participants and 'products' as can be achieved can only serve to benefit the reduction of abatement costs to members and the general community. This being the case, instruments such as futures, options, exchanges etc. ought to be encouraged as leading to a more efficient outcome over time.

⁵ ABARE Research Report, 1998, p.44

Inclusion of Carbon Sinks

Under the FCCC the role of carbon sinks in meeting global emissions target is explicitly recognised. Yet no details have yet been decided upon by the negotiating parties of the exact basis or nature of the inclusion of carbon sinks in emissions reduction. This is both because scientific and diplomatic developments surrounding this issue remain uncertain. If Australia were to develop its own methodology for carbon sinks it would be doing so in a realm of science which is still subject to much debate. Nevertheless, the role which carbon sinks may play in Australian emitters meeting the terms of the Kyoto Protocol with the least cost to the general economy means that this is an area which demands further investigation.

The scientific obstacles to the inclusion of carbon sinks in any regime of tradeable emissions are significant. For example, estimates on the effects of land use changes are characterised by wide margins of error. Currently, a typical measurement uncertainty for the effects of land use is as great as 60%.⁶ In order to account for these degrees of uncertainty while still including land use within the regime some form of discounting, as previously discussed, might be appropriate. Carbon sink methodology is similarly complicated. For example, new research in Queensland suggests that regrowth after land clearing may result in amounts of carbon being stored which are three times the amounts released during clearing. Massive land clearing is not the answer to Australia's greenhouse obligations, but the example serves to illustrate the uncertainty in this area.⁷ Issues which would need to be addressed include the different rates of carbon sequestration by various tree species, and the question of whether carbon sequestration is to be measured over a tree's life-cycle or over the permit period. There is significant uncertainty even about the growth rates of different forest types, as the National Greenhouse Gas Inventory Committee notes.⁸

Were these obstacles to be overcome, the inclusion of carbon sinks into a tradeable emissions market would be valuable. Firstly, it would increase the number and flexibility of approaches to reducing greenhouse gases. This has the potential to address the marginal costs of abatement quite substantially, although as discussed such calculations are only gradually becoming more reliable. The option of investing in carbon sinks provides a useful way in which major emitters can potentially off-set their emissions output. Secondly, the inclusion of carbon sinks also reduces the total cost of meeting the emissions target which Australia has committed itself to through the Kyoto Protocol.

Some of the concerns about the scientific and data reliability of measuring carbon sinks might be met through learning from existing schemes which incorporate some limited

⁶ Mr Roger Beale AM, Secretary, Department of the Environment 'Issues in Measurement and Compliance', 12 February 1998

⁷ *New Scientist*. January 1998, p.45

⁸ NGGIC Workbook 4.2

forms of carbon sinks. Examples of these are the Greenhouse Challenge Program, or the NSW electricity systems licensing requirements. Overseas experience might likewise improve the quality of scientific measuring of the effects of carbon sinks. Thus further information might be garnered from various Joint Implementation (JI) or 'Clean Development Mechanism' projects under the Kyoto Protocol.

Implementation Issues

Reconciling Emissions Trading with Existing Programs

A principle of any adoption of a tradeable emissions regime must be that emissions abatement measures already undertaken, at net cost to industry, by voluntary arrangement, not disadvantage those who have chosen to take them.

It is essential that the existing GHG abatement programs, and more general environmental regulations which impinge upon this area, be competitively neutral, and thus do not introduce loop holes or distortions into a regime of tradeable emissions. Likewise, obligations which place extra restrictions which impact negatively on participants' ability to take advantage of market opportunities are to be avoided. Existing Greenhouse Challenge participants, for example, should not be disadvantaged by the new arrangements, given that they have already entered into voluntary arrangements for the public benefit.

The operation of the National Greenhouse Gas Inventory may also need to be reviewed in the light of the emergence of a tradeable emissions market to ensure consistency and simplicity of reporting obligations.

A National Emissions Market

While the establishment and maintenance of an effective emissions trading regime would require the cooperation and assistance of many stakeholders, and State and Territory governments, a national regime is essential.

The adoption of a national regime would reduce the transactional costs of emissions trading significantly, and thus should be preferred over any State or Territory based proposals. Given the development of national energy markets in both electricity and gas, State or Territory based arrangements are becoming increasingly irrelevant. The Industry Commission has estimated that separate State or Territory based schemes

would make GHG abatement more expensive for individual emitters.⁹ As well as this, the fracturing of responsibility for meeting a national goal agreed at Kyoto might lead to eventual non-compliance with that agreement. Finally, the successful integration into any future international emissions trading regime would be complicated greatly by a proliferation of State or Territory based arrangements.

Implementation Timing

The energy market has as a principal feature of its investment and development patterns extremely large scale projects with long lead times from initial planning to final production. These longer term projects are often not amenable to rapid changes in market environment, making stability and predictability premium requirements. In addition to this, the nature of energy as a commodity means that margins of profit are highly vulnerable to shifts in capital costs, energy prices, and government measures.

The rapid introduction of any tradeable emissions regime would therefore be of great concern to the energy industry. Thus the phase in date would need to recognise the economic assumptions underlying infrastructure and capital expenditure which is occurring at present or imminently, and endeavour not impact negatively on investment decisions already made. Were no regard to be had to these factors, the overall economic effects would be distortionary and severe.

Future Interaction with International Regime

A crucial element of any national regime is the possibility that Australia, through its adherence to the Kyoto Protocol, could soon be playing a role in the development of and participation in an international emissions trading regime. The possible interaction of a national and international regime is a key issue in the development of a national regime.

By beginning to address issues relevant to a national emission trading scheme now, Australia will be better placed to ensure that international arrangements meet Australia's particular circumstances.

A major issue in the linking of a national and international system must be equity in the transferability of permits and permit credits (eg from carbon sinks) between the two systems. This linking, to be acceptable to the gas and wider energy industry, would need to take account of Australia's particular position as an energy exporting nation. In particular, the net global effects of emissions needs to be appreciated. For example,

⁹ Industry Commission Staff Research Paper, p.24

expanded production of natural gas based iron ore reduction will provide a net decrease in GHG emission (replacing coal which would otherwise be used), although Australian GHG emissions would increase. Processing of Australia's valuable LNG exports raises the same issue, as previously noted. The arrangements for transferability must not disadvantage these major industries which provide net global greenhouse benefits.

In an international emissions trading regime the question of who is able to hold emissions permits is of central importance. Some proposals contemplate only national governments being able to hold or trade permits, while others allow the participation of private individuals. In considering this question, the twin goals of an emissions trading scheme ought to be borne in mind. They are, firstly, achieving market flexibility, and secondly, ensuring that permit values reflect the real marginal costs of abatement (rather than public policy or political objectives). These twin objectives means that private emissions traders would be a valuable force within the market, ensuring greater competition and the development of innovative market instruments. Their participation will also guarantee that permit prices can truly reflect marginal abatement costs, rather than artificial, unstable, and intangible political preferences.

Finally, to be viable, any international emissions trading regime would need to be an inclusive process, involving developing countries. By 2016, developing countries are estimated to account for over half of total global emissions. This means that their exclusion from the mechanism of emissions trading would fundamentally undermine the efficiency rationale of a market approach. In many developing countries, for example, marginal abatement costs will be considerably lower than those in developed countries, making international emissions trading a potentially rich source of revenue for developing nations.