



Centre for Energy and
Environmental Markets

CEEM submission to:
*A National Emissions Trading
Scheme*

Regina Betz
Iain MacGill
Robert Passey

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Preamble

There is considerable and growing worldwide interest in emissions trading as an economy-wide policy measure that effectively creates a competitive market for greenhouse emissions to efficiently deliver the reductions necessary to minimise climate change. Internationally, the EU Emissions Trading Scheme (EU ETS) began operation in January 2005, while the Kyoto Protocol's Joint Implementation (JI) and Clean Development Mechanism (CDM) are also built around emissions trading. In Australia, NSW has introduced a state-based ETS, and while the Federal Government has expressed opposition to national emissions trading, Australian State and Territory Governments have begun exploring options for a multi-jurisdictional ETS.

As part of this latter work, an Inter-Jurisdictional Working Group on Emissions Trading is conducting an inquiry of stakeholders on their design options for a national emissions trading scheme. The Emissions Trading Working Group released a draft report in September 2005 and requested submissions.

The UNSW Centre for Energy and Environmental Markets (CEEM) seeks to provide Australian leadership in interdisciplinary research in the design and analysis of energy and environmental markets and their associated policy frameworks. CEEM brings together UNSW researchers from the Faculty of Commerce and Economics, the Faculty of Engineering, the Australian Graduate School of Management, the Institute of Environmental Studies, and the Faculty of Arts and Social Sciences, working alongside a growing number of international partners. Its research areas include the design of spot, ancillary and forward electricity markets, market-based environmental regulation and the broader policy context in which all these markets operate. You can learn more of CEEM's work by visiting its website: www.ceem.unsw.edu.au.

Emissions trading options for Australia is an area of ongoing work for CEEM. This submission draws upon previous work exploring the NSW Greenhouse Gas Scheme and the EU Emissions Trading Scheme. Our focus in this work has been on the importance of scheme design to achieving effective and efficient emissions reductions. Papers on this work include:

Passey, R., MacGill, I., Nolles, K., Outhred, H. 2005, The NSW Greenhouse Abatement Scheme: an analysis of the NGAC registry for the 2003 compliance period, Draft CEEM discussion paper for comment, DP_050405, April.

MacGill, I.F. H.R. Outhred and K. Nolles, 2004, National Emissions Trading for Australia: key design issues and complementary policies for promoting energy efficiency, infrastructure investment and innovation, Australasian Journal of Env. Management, Vol. 11(1), March.

MacGill I.F., Passey, R., Nolles K. Outhred, H. 2005, The NSW Greenhouse Gas Abatement Scheme: An assessment of the scheme's performance to date, scenarios of its possible performance to 2012, and their policy implications, Draft CEEM discussion paper for comment, DP_050408, April.

Betz, R.; MacGill, I 2005, Emissions trading for Australia: Design, transition and linking options, Draft CEEM discussion paper for comment, DP_050815, August.

In this submission we restrict ourselves to addressing the particular questions posed in the stakeholder paper. However, we emphasise that **the interaction of design choices has significant impacts on both effectiveness and efficiency**, and there is a need for testing proposed designs experimentally.



Content

Preamble	2
Content	3
Overview.....	4
Responses to the Report's key points	6
Proposition 1: Cap and trade scheme	8
Proposition 2: National and sector based	12
Proposition 3: Setting the cap	13
Proposition 4: Initial coverage	16
Proposition 5: That the scheme cover all six greenhouse gases	20
Proposition 6: Allocation basis	21
Proposition 7: Price ceiling penalty	25
Proposition 8: Offsets.....	27
Proposition 9: Mechanisms to address adverse effects and structural adjustment	29
Proposition 10: Early action & new entrants.....	30
PROPOSED NEXT STEPS	34
OTHER SCHEMES.....	36
References.....	37



Overview

An effective climate change response seems certain to require major, rapid and then sustained physical reductions in global greenhouse emissions from fossil fuels. This will require much greater use of efficient end-use, lower emission fossil-fuel and renewable energy technologies. The key decisions are in infrastructure and major capital investment. Technical innovation is essential, as is a concerted effort to reduce the use of current polluting technologies.

Greenhouse emissions represent 'unpriced' externalities in most existing markets. Emissions trading systems (ETS) can be established by setting a target of allowable emissions, establishing an associated quantity of allowances and then requiring market participants to have allowances sufficient to cover their emissions. Trading between participants with low-cost abatement options and those with only high-cost options can maximise the economic efficiency of the process.

There are limits to what such schemes can achieve because emissions trading markets and the markets which they must drive (particularly those for energy) suffer from a range of market failures. Still, a growing number of countries envisage that an ETS will be their major climate change policy measure both in terms of driving action, and as a backstop that increase the likelihood that environmental objectives are met regardless of how other policies perform. The interaction of ETS with other measures in an increasingly crowded policy space is therefore a key issue.

Emissions Trading Schemes are designer markets – governments create and can change the rules. There is, therefore, an enormous amount of flexibility in the chosen design of such markets and this poses both opportunities yet risks for policy makers. It is possible to create extremely complex and abstracted schemes, and the policy process is vulnerable to stakeholder pressure, with the result that while the scheme may meet internal criteria, these may not translate into physical abatement. Still, some fundamental design parameters are clear – any effective market design will require a tradeable commodity, willing buyers and willing competing sellers.

There is a fundamental choice to be made between restricting trading to physical measurable emissions or including 'estimated' and inherently uncertain net greenhouse flows from land-use activities or even so-called 'emission reductions' from BAU baselines. In many schemes this baseline is some estimate of 'Business As Usual' (BAU) emissions; that is, what would have happened without the scheme. Such baselines are, of course, essentially unknowable, and establishing them is a fraught process.

Finding willing buyers of externalities such as greenhouse emissions generally requires mandatory requirements placed upon some sectors of the economy. The greater the number and diversity of participants, the greater an ETS's capacity to drive low-cost emission reductions. The measurability of emissions is, however, a key issue. There is also typically a choice between making small numbers of upstream or larger numbers of downstream participants liable parties. The presence of willing buyers also depends greatly on the initial allowance allocation and the severity of the target. Allowances can be either auctioned, or grandfathered to emitters on the basis of historical emissions or, worse, BAU emission estimates. There are theoretical and practical reasons to believe that auctioning will drive greater innovation in energy technologies than grandfathering.

Willing sellers may also be in short supply, and depend on allowance allocation and the target. In 'cap and trade' schemes, participants are potentially both buyers and sellers, depending on their emission reduction options compared to others in the market. In 'baseline and credit' schemes, a

similar arrangement is possible with participants buying or selling depending on how emissions depart from their baseline. Typically, however, emissions reductions are provided by project developers who don't have a direct scheme liability, but volunteer to act. The liability falls, instead, on institutional parties; for example, electricity retailers in NSW GAS.

Baseline and credit, and cap and trade schemes are closely related, and can under some design choices be theoretically shown to achieve equivalent outcomes. For example, 'cap and trade' schemes with grandfathering can resemble 'baseline and credit' schemes with historical baselines. Similarly, ETS is closely related to emission, or so-called carbon, taxes – for example, 'cap and trade' schemes imposed upstream with auctioned allowances become what is effectively a tax for most participants in energy markets. Again, however, there are important practical differences between the different scheme designs.

We attempt to highlight the impact of these key design choices in answering the particular questions posed in this stakeholder consultation document.



Responses to the Report's key points

Issues for Consideration

Are there any additional criteria that should be considered?

As a key policy instrument for environmental protection, it would be useful to incorporate key internationally established criteria for such regulation; in particular the 'polluter pays', 'prudent avoidance' and 'precautionary' principles. More specifically, it might be valuable to add the following criteria:

- 1) Avoiding market power: the paper mentions "liquidity within the market" as a criterion. However, preventing market power and ensuring a competitive market are also essential in achieving efficient market outcomes. In the case of a solely Australian national scheme, **market power** might become an issue as demonstrated for the NSW GAS by research including Passey et al. (2005).
- 2) Dynamic incentives: The paper mentions "investment certainty" as a criterion. However, it does not mention the need to provide incentives for innovation. Since **dynamic incentives** are highly dependent on scheme design, and not only from quantitative restrictions, it might be added as an additional criterion.
- 3) Robustness and flexibility with regard to possible future developments: the paper includes the "capacity to harmonise and / or integrate with existing schemes" and "flexibility to incorporate changes in international policy" as criteria. However, it is also important that the chosen scheme design be robust and flexible with regard to **other possible future national policy decisions**.
- 4) Transparency: an open and transparent policy process during both scheme development and implementation with equitable stakeholder participation is more likely to deliver an effective and acceptable scheme design.

Which criteria do you consider a priority and why?

The following list shows our approximate ranking of criteria importance:

- | | | |
|---|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Environmental performance: | The extent to which the environmental objective is achieved |
| 2 | Efficiency: | The extent to which the required objective is met at least cost
Dynamic incentives that drive technical and managerial improvements |
| 3 | Equity aspects: | The extent to which any group (public, industry or firm) is unfairly disadvantaged or favoured |
| 4 | Technical administration and practicality: | The administrative costs for implementation and maintenance, practicality, transparency |

Environmental performance has the highest priority. This does not necessarily mean that the target has to be met precisely in a short period - there might be some time flexibility. But in the long run it is important that the greenhouse gases are reduced and therefore absolute targets are necessary. Minimising climate change at slightly higher cost than might have been possible with different policy choices is still almost certainly worth while.



Nevertheless, economic and dynamic efficiency are very important in reducing the costs of achieving environmental targets. This achieves higher public acceptability and enhances society's ability to fairly manage the transition to a lower emission economy.

The third general criterion relates to distributional impacts which will play a key role in the political acceptability of a scheme and its fairness. It is important, however, to note that transitions always require winners and losers, and that there are other ways to address hardships imposed on some groups that just by changes to the scheme design. Great care must be taken not to implement a scheme that protects participants from having to change their behaviour.

Which criteria do you consider unimportant and why?

As noted above, the criterion to "minimise adverse sectoral impacts..." is highly questionable since the emissions trading scheme should lead to a structural change to a lower carbon intensive economy in the long run. Protecting sectors which should be in the long run replaced by less carbon intensive ones would therefore be against the long term aim of the policy instrument. However, in the short term and to prevent relocations to countries which are not a member of the carbon constraint world today (and might even produce the goods with higher emissions) short term measures might be introduced. However, the most difficult point will be to ensure that the measures are only temporary. In addition, the main problem is already addressed under the other criterion of "capacity to address impacts on employment, families and the low paid" which should be prioritised, and can be addressed through policies other than the scheme itself.

The criterion of the "ability to accommodate a range of offsets including carbon sinks" seems to be lower importance since the focus of the scheme should be on measurable and verifiable emissions reductions. Including offsets such as carbon sinks will increase the complexity of the system and might have an impact on environmental integrity as there can be relatively high uncertainty in measuring the carbon emissions abatement of many types of projects. More generally, project-based mechanisms generally require a 'baseline and credit' approach that is always problematic because it is inevitably counter-factual – that is, additionality is very hard to verify.

The importance of the criterion "generate revenue to support greenhouse gas abatement activities" depends mainly on the stringency of the target. From an economic standpoint it would be unnecessary to use the revenue for further reductions if the target is set at the efficient level (marginal damages cross marginal abatement costs). In practice, targets are unlikely to be set at an efficient level (this level is almost certainly unknowable) and there may be valuable opportunities to use such revenue to drive abatement in sectors not covered by the scheme, or actions that lie within the scheme but are impeded by market failures and barriers. However, there are obvious risks with governments attempting to direct funds when we have, after all, established a market to seek out the best abatement opportunities.

The importance of the criterion "liquidity within the market" needs to be clarified. Auctioning ensures liquidity on the primary (or initial allocation) market but will usually lead to less trading on the secondary market. This is because with efficient auctioning rules, the allocation will be closer to the efficient distribution of permits than under grandfathering. Under those circumstances liquidity in the secondary market would not be so important as investors would know they can sell or buy allowances at the next auction. Liquidity needs to be considered in the light of these complexities.

The importance of the scheme's "capacity to harmonise and/or integrate with existing schemes..." depends greatly on the particular effectiveness of such schemes. The integrity of the ETS might be severely compromised if it has to harmonise with any existing, poorly designed and implemented policy instruments. In such cases it could well be preferable to extinguish such existing schemes, or at the very least, have them completely separate to the ETS.

Proposition 1: Cap and trade scheme

A cap and trade system has significant advantages over 'baseline and credit' approaches to emissions trading (MacGill et al, 2005) and we certainly support this chosen approach.

Questions for stakeholders

Are there elements of other approaches which you would propose to include in a cap and trade scheme?

We are unclear as to the intent of this question. As noted in more detail later in this submission, we have concerns about the inclusion of project 'baseline and credit' offsets in the design. More generally, even a comprehensive ETS will still only be part of any effective and efficient energy and climate policy framework.

To what extent does an Australian scheme need to be consistent and compatible with other schemes internationally (and therefore facilitate linking to those schemes)? What elements of a cap and trade scheme are required to ensure compatibility with other international schemes?

It is certainly possible to design an effective stand-alone Australian ETS. The scheme design might actually be compromised should it be made consistent with any poorly designed international schemes.

However, there are clearly advantages to having the chosen scheme design consistent and compatible with well designed international schemes. The key elements to ensure compatibility with other international schemes are described in the following on the basis of a potential linkage to the European ETS. This is the largest ETS in the world and, in our view (Betz and MacGill, 2005), has a fundamentally sound design even though some poor choices were made in permit allocation:

Ratification: Non-Kyoto ratification raises problems with trading in Kyoto Units as these are required by EU member states for their own compliance.

Coverage: the EU ETS directly includes only CO₂ at present while the proposed multi-jurisdictional Australian scheme includes gases which might only be quantifiable with high uncertainty. Similarly, unlike the Australian proposal, the EU ETS does not currently include sinks projects (not directly and not through CDM or JI) - because of the temporary character of the credits, their measurability problems, leakage and longer-term uncertainties. The EU is unlikely to wish to import such uncertainties into their own scheme through linkage.

Stringency of target: Differences in stringency of targets will impact on the initial distribution of wealth between companies and countries. Nevertheless, the competitiveness concerns would arise anyway and are not a result of linking. An overall reduction in environmental performance might occur if one scheme sets targets that are less stringent than business as usual projections. Under a non-linking scenario the price in that system would be very low and if banking is not possible there might be no demand for the surplus allowances. If this scheme is linked to a scheme with more stringent targets, companies in the stringent scheme will buy the surplus allowances, and so the combined emissions of the linked systems would be higher than if they weren't linked (Blyth / Bosi 2004).

Sanctions: For linked schemes these default to the least onerous. The EU ETS has a penalty for non-compliance yet still requires that participants 'make good' in later periods. The Australian proposal uses a penalty that is capped and no requirement to 'make good'. This is less stringent and would put environmental outcomes of the EU scheme at risk.

What are some of the opportunities and risks associated with linking to other international schemes?



Opportunities of linking: An effective policy response to climate change will require coherent global action, and international schemes provide possible vehicles for cooperation and shared effort. A larger emissions trading market will, all other things being equal, lead to higher efficiency gains because there will be more variety and cost differences in reduction options. If no such gains are available, then no trades will occur. Furthermore, linking can increase the liquidity of the market and reduce market power. The latter might be especially a problem in a national Australian scheme, given experiences in the NGAS market in NSW (Passey et al, 2005).

Risks of linking: Australia's ETS would be adversely impacted by poor design choices or later policy decisions impacting the ETS of the country or countries it is linking with. It is possible that permit prices in Australia could be adversely impacted by unexpected events in these other countries that markedly change their emissions and hence requirements for permits. Financial flows between Australian companies and those in the other countries could then also change unexpectedly, with consequent effects on energy prices and international competitiveness.

Is it possible to take advantage of the opportunities, while minimising Australia's exposure to the risks involved? How might this be achieved (e.g. through single desk export arrangements)?

Unilateral linking would enable Australia to profit from other schemes without being exposed to the risk involved. However, the advantages of unilateral linking depend on the assumed price differences between the Australian Scheme and e.g. the EU ETS. There are two options for unilateral linking and before any decision can be made an estimate of the mitigation costs of both schemes is required.

Assuming that the mitigation costs in **Australia are higher than under the EU ETS**, linking would provide cheaper allowances from Europe. In the short run this might be an option if politically acceptable for the EU. Australian companies would be able to buy e.g. EU allowances and account them against their target but they would not be able to sell Australian allowances in the EU ETS market. As the European Directive foresees the possibility that any private (also foreign) entity is able to open an account and trade allowances on the market, there appears to be no technical obstacles. If, from 2008 onwards, the Australian scheme was to accept EU allowances which are linked to AAUs or credits from CDM or JI, these would need to be cancelled when used for compliance with the Australian scheme. This option is actually the interim solution which is implemented for Norwegian companies before linking with the EU ETS is finalised. However, as mentioned before it is unlikely the EU would accept this option in the long term. It may be possible as an interim solution as both schemes are linked progressively over time until a full linkage is achieved.

Assuming that the mitigation costs in **Australia are lower than under the EU ETS**, there would be an opportunity to sell these allowances to Europe. This option is unlikely to be acceptable to the EU without Australia ratifying the Kyoto Protocol. EU states will need Assigned Amount Units (AAUs) to be able to fulfil their commitments and won't accept any reductions which are not backed by AAUs. In addition, it is unlikely the EU would allow Australia to benefit from the EU ETS without ratifying Kyoto, as this would reduce pressure to ratify.

What elements of the European emissions trading experience should be taken into consideration in establishing the broad framework of the scheme?

The EU ETS only commenced operation in 2005 so experience to date is limited. However, a lot of experience has been gained through the establishment and design of the scheme, and there was an interesting report published recently:

- The Öko-Institut report "**The environmental effectiveness and economic efficiency of the EU ETS: Structural aspects of the allocation**"
http://www.panda.org/about_wwf/what_we_do/climate_change/publications/index.cfm?uNewsID=50500
- WWF ETS Phase 2 CAP paper "Tough caps on CO2"
http://www.panda.org/about_wwf/what_we_do/climate_change/publications/index.cfm?uNewsID=50541

Environmental performance: The EU ETS is expected to have reasonable environmental performance based on its sound underlying architecture. Absolute targets for CO₂-emissions are very modest but do exclude risky accounting sources or gases, as well as sink-projects, and this probably represents a reasonable approach for the first period. In addition, robust monitoring and reporting requirements as well as deterrent sanctions will help to reach the targets. The European Commission has played an important policing role in EU ETS design via the Directive.

Economic efficiency of the chosen EU ETS design seems less favourable. The partial coverage of the scheme would not cause any problems if marginal mitigation costs were the basis for sharing the targets between covered and non-covered sectors. However, most countries have chosen modest ETS targets while imposing large reductions on non-covered-sectors to meet Kyoto liabilities. Also, the current market and prices do not appear to be mature in that they don't reflect the actual costs of abatement. Technical problems and delays and the almost complete grandfathering of allowances leading to low trading volume have had a negative impact on the market's development. Auctioning would have helped to create robust early price signals.

Dynamic incentive: This is also likely to be low in the EU ETS, and grandfathering of allowances is again a major reason. The 'new entrant' and 'closure' arrangements that attempt to compensate for this have only limited effectiveness in driving investment in cleaner new plant and the closure of older high-emission plant. Finally, future allocation rules are unknown, adding to the uncertainty of benefits from new investments.

Technical administration and practicability impact on the transaction costs of the EU ETS for both the administrative body and the participating companies. The large number of small installations covered by the scheme imposes significant transaction costs.

Equity and competitive aspects: There is a clear potential for wind-fall profits going to electricity producers because of the free allowance allocation chosen in almost all NAPs. This will lead to potentially considerable wealth transfer between consumers and producers and hence impact negatively on equity. Again, auctioning would help address this problem.

Has your organisation had any experience of the European emissions trading scheme or other international schemes? If so, what lessons do you believe an Australian scheme might draw from that experience?

Yes, a member of our organisation has experiences with the European Emissions trading scheme. She was involved in the process of implementing the European Directive and establishing the National Allocation Plan in Germany and Luxembourg. In addition, she has been involved in assessing and comparing the different NAPs (see Betz et al. 2004) and evaluating the NAPs regarding investment incentives (Schleich & Betz 2005).

Perhaps the most important lesson for Australia from the EU ETS concerns the process by which all these design choices are made. As seen with the different National Allocation Plans within the EU scheme, there is considerable potential for a 'race to the bottom' between nations attempting to protect particular industries, or create some competitive advantage through, for example, lower energy prices than other member states. The European Commission has played a key role in policing such behaviour. The states and territories might wish to explore how they can establish

institutional arrangements that can manage the inevitable political manoeuvrings that will arise in scheme design.

Other main lessons learnt from this involvement:

1. It is worthwhile spending a lot of time initially when defining the point of liability and assessing the number of installations covered by the scheme. Many EU Member States are currently implementing the Directive differently since they have chosen a different interpretation of Annex I (point of liability). Moreover, the thresholds have to be chosen very carefully in order to result in with cost effective solutions. Smaller installations are likely to be better covered by other instruments such as a carbon tax with an ETS opt-in provision or through a mechanism such as "domestic projects". A cost benefit analysis is required to determine where the threshold should be set. The threshold should be based on "production" rather than on "emissions" to encourage investment in less emission-intensive technology and at the same time exclude back-up installations etc.
2. Monitoring and verification rules should be in place before the data used for allocation is collected. Otherwise the data needs to be collected twice.
3. Get the technical infrastructure in place on time otherwise the market will not operate efficiently from the very beginning. This occurred with the ETS because most of the EU registries took longer than expected to be operational. Since they are necessary to allocate allowances and for spot trading the market currently does not include all Member States.
4. Use experimental economics to test some of the design options in a laboratory before implementing them. This includes design features like different auction designs, impacts of including long-term permits in addition to short-term permits, and linking schemes with different sanction approaches.
5. Start simple and do not try to address all special circumstances within the scheme. Germany ended up with 60 different allocation options which are administratively difficult to handle and created more than 1500 requests for review of the allocation and payment decision. The special rules have created especially stringent reductions for installations which were not able to apply any of the special rules.
6. The allocation rules should be set at the beginning and later on there should only be negotiations regarding the overall target, not to the rules. Late rule changes will have unexpected impacts since the interdependences are complex.

Proposition 2: National and sector based

Questions for stakeholders

Is national consistency an appropriate goal?

National consistency is certainly an appropriate goal, but may not be an achievable one given the present position of the Federal Government, and the difficulties of developing effective policies from multi-party negotiations when there is no clear consensus on the need for action. It is therefore also important to design a robust policy process that can resist attempts by any recalcitrant parties to either kill the deal or obtain unreasonably generous terms.

Are there any jurisdictional variations that could be considered that do not undermine the desire for national consistency?

It would be better not to include any jurisdictional variations since they will make the scheme more complicated. However, if this is necessary to reach an agreement, each jurisdiction might be given some opportunities to direct state allocation of permits. This was the approach taken for the EU ETS. Note, however, that these separate national allocation plans appear to have favoured national competitiveness concerns in preference to efficiency (for example, almost no auctioning) and have added greatly to the scheme's complexity. The European process seems to strive for more harmonisation regarding allocation (e.g. benchmarking initiative from a group of Member States).

Could a system operate effectively without all States and Territories involved?

There are three major issues here – potential impacts on the scheme's effectiveness, possible competitiveness impacts on those states that are involved, and jurisdictional implications for scheme design.

The greater the coverage of the scheme, both across states and across sectors, the greater the opportunity to maximise the environmental effectiveness and economic efficiency of the scheme. Market power issues are also reduced.

However, it seems likely that an ETS of some form can still be implemented even if one or more states choose not to be involved. The competitiveness impacts are likely to be focused on energy intensive industry development but possible emissions costs still form only part of the equation of where projects will locate. Future carbon liabilities are likely to make such energy intensive industry development problematic over time, and likewise will make development of less emission intensive industries a blessing.

Jurisdictionally, the absence of some states could greatly constrain scheme design – particularly if one of these states is part of the NEM. Under these circumstances there would be the problem of leakage (that is, an incentive to increase the export of electricity from non-participant states to participant states). This will require careful consideration when balancing robustness against effectiveness during scheme design.

What institutions would be required for a nationally administered scheme?

The first question is what institutions are required to design an effective national ETS. The European Commission played a very important role in policing EU member states during the ETS design and implementation. It had significant powers to constrain and reject national government proposals and these turned out to be vital to maintaining the integrity of the scheme design. The multi-state effort here in Australia lacks such an institution and this is a serious impediment.



More generally, there is a need for separate institutions in each of the following areas:

- scheme development and design,
- scheme implementation and administration, and
- scheme review and evaluation

A formal and transparent stakeholder process for each of these institutions is important to their success. The linkages and information flows between these institutions also need to be formal and transparent as much as possible.

Transferring the responsibility of emissions management over to an independent institution - such as occurs with central banks in the monetary markets - might be a solution to reduce political uncertainties, which is crucial for long-term investment decisions.

Proposition 3: Setting the cap

Questions for stakeholders

How should a cap for the stationary energy sector be set? And how should it relate to an economy wide emissions target? How should the abatement potential of the noncovered sectors be taken into consideration in setting the cap for the stationary energy sector scheme?

A physical cap is vital for the effectiveness of the scheme and needs to be established with regard to both short and longer term national emissions abatement targets. When allocating abatement responsibility between covered and non-covered sectors, their relative abatement costs and potentials have to be taken into account in order to meet the criteria of overall economic efficiency. However, if the "non-covered sectors" are indirectly covered through offset arrangements in the scheme, allocating the abatement responsibilities becomes more complicated. This is another argument for avoiding such offset arrangements in the scheme design.

How can the marginal costs of abatement in different sectors best be established?
What information is currently available on marginal costs?

As noted in the discussion paper (Betz and MacGill, 2005), there are difficulties and complexities in establishing accurate marginal costs for the wide range of activities within and outside the scope of the ETS. Previous experience also suggests that industry sectors can take advantage of information asymmetry between themselves and policy makers and 'game' estimates of these costs. Nevertheless, international benchmarking and independent studies can provide useful information for scheme design.

Should scheme caps and/or economy wide targets be set beyond the first commitment period of the Kyoto Protocol? For example, are medium to long term scheme caps and/or economy wide targets an appropriate means for providing investment certainty? Are there other means of providing reasonable certainty for investors and what are their relative merits?

The future of the post-Kyoto Protocol process will hopefully be clearer following the first COP/MOP in December 2005. Climate science is firming on the need for major emissions reductions in the longer term. There is a difficult balancing act to be achieved between maintaining flexibility and helping guide investment. It has to be kept in mind that uncertainty can not be eliminated it can only be transferred from the private to the public sector. Given the uncertain status of international climate policy, there are great risks in governments effectively signing away 'property' rights on emissions through fixed longer-term caps and grandfathering.

Furthermore, future climate policy is only one of many uncertainties that organisations have to consider when making investments. Therefore it is inappropriate to aim for removal of all investor uncertainty since markets rely on uncertainty in order to work, and they have established mechanisms to deal with uncertainty (e.g. derivatives).

However, emissions trading is a designer market, meaning there will always be political uncertainty. ETS are by their nature 'creatures of statute' and governments should reserve the right to change the rules as necessary. In order to enhance the incentives for innovation and reduce political uncertainty, as stated above, independent institutions guided by long term targets might be appropriate. Allocation rules and caps should be decided for a period longer than five years. In the case of the EU ETS, this period has proved to be too short for most industries with 20-30 year investment cycles, although the use of national allocation plans and grandfathering have greatly contributed to problems there (Schleich and Betz, 2005).

If medium to long term caps were to be considered, how should they be determined?

Long terms caps should be set on the basis of scientific information regarding the degree of reductions necessary to cope with climate change and on agreed international climate policy efforts. Australia's role should be established under the principles of:

- accountability: the developed world is responsible for the great majority of historical emissions and has far higher per-capita emissions than the developing world, and
- capability: the developed world has far greater resources available for acting to reduce their own emissions while helping the developing world reduce their emissions.

Given uncertainty about what the level of possible future international targets for emission reduction, how far should governments go to provide certainty for investors? To what extent might certainty for investors be at the expense of appropriate flexibility for governments?

This is discussed above.

How can the scientific and political uncertainties best be incorporated into setting of the cap to ensure that future governments are not faced with unreasonable carbon liabilities?

In its general sense, a **liability** is anything that puts one at a disadvantage. In this regard, carbon liabilities include future damage to our ecosystems, society and economy, as well as more specific issues of financial responsibility for emissions. Given today's scientific knowledge, policy makers should reserve the right to change the target. However, the process of setting the target should be transparent and it should be obvious that if anything, it is going to be more stringent over time. To make the overall trajectory clear, a long-term target should be set (e.g. 60% reduction by 2050), with a short term target set for the next 5-10 years. In addition, from the beginning of the scheme it should be clear that future allocation rules will be based on 100% auctioning.

Uncertainty about abatement costs and damage functions is assessed in economic theory on the basis of 'price versus quantitative instrument'.¹ Long-term abatement costs are uncertain and there is a broad range of cost estimates for the damage that could arise from climate change. If it is assumed that the marginal damage curve is flatter than the marginal abatement cost curve, a price ceiling is often seen to be favoured compared to a fixed target approach. However, with this argument the start of serious climate policy can always be postponed and it is questionable if a sufficient price level can be agreed. The process of implementing the carbon tax in the European Union has shown how difficult it is to agree on any substantial tax level. This might be because of the high transparency of the tax burden compared to damage costs, or possibly because of the

¹ See Weitzman, M.L., 1974, Prices vs. Quantities, *Review of Economics Studies*, vol. 41, October and see new OECD/IEA Paper on *Evolution of mitigation commitments: Certainty versus stringency*, 2005.

requirement for a unanimous vote. Moreover, it is probable the marginal damage curve will be steeper than the abatement cost curve, especially if 'climate surprises' become more likely. In this case stringent quantitative targets will be needed in the short-term. At least the risk of approximating a "tipping point" which some climate scientists assume exists should be included in whatever decision is made.



Proposition 4: Initial coverage

The EU ETS also focuses on stationary energy. However, it is not clear why transport should not be included – the AGO (2002) amongst others has suggested that all fossil-fuel combustion sectors including transport be included in an Australian ETS. It might be argued that current excise arrangements already reflect an effective carbon tax on fuels. Nevertheless, there are linkages between the stationary sectors and transport as well, particularly in terms of natural gas. Including the gas sector upstream within the ETS could adversely impact gas use in transport. In addition, transport emissions have been growing rapidly over the last decade and there is significant short-term reduction potential due to shorter investment cycles for the vehicle fleet.

Questions for stakeholders

How should the stationary energy sector be defined?
Should non-emitting energy generators (eg renewable energy) be included in the scheme as they will not incur a liability?

What to include in the definition of the stationary energy sector will depend on whether generators are defined as ‘combustion installations’, or as ‘electricity generation’ and/or ‘heat generation’. It also depends on whether permits are given out for free or auctioned, both to existing and new generators.

Defining included generators as ‘**combustion installations**’, as they are defined under the EU ETS, means that bioenergy is the only renewable technology that will be included under the scheme. Assuming that all permits are grandfathered², renewable energy technologies only indirectly benefit through the higher electricity prices of combustion-based technologies. Thus, the greater the level of auctioning to existing and new entrants, the greater the incentive to invest in renewables, since they would need no permits. However, depending on the value of permits, renewable energy plant may still require support by other instruments and/or policies (e.g. MRET).

Defining included generators as ‘**electricity generation**’ (e.g. for Photovoltaic) and/or ‘heat generation’ (e.g. for Solar hot water heaters) will include all renewable energy technologies in the scheme directly. If a significant amount of certificates are to be given away for free, renewables would be better off with a ‘benchmarking’ scheme – based on tCO₂/kWh. This might be favourable if no other policies support renewable technologies. Benchmarks may be derived in two different ways and would then be multiplied by past electricity production in order to derive the total allocation for an installation:

1) "Best available technology" (BAT) benchmarks, e.g. a natural-gas based, combined-cycle production unit (e.g. 324g CO₂/kWh). In this case renewable technology investors will be able to sell their allowances since they are considered "zero emitting installations", and so finance part of their investment costs.

2) Average emissions benchmark in a specific country and base period (e.g. 2004-2005). In this case the allocation for renewables would even be higher since the benchmark will most likely be higher.

If permit allocation is instead based on grandfathering, renewable energy operators would not be allocated any permits and their direct profits would be very low (zero with 100% grandfathering). In this case there is no difference for renewable energy operators if the scheme is based on ‘electricity generation’ or on ‘combustion installation’.

² The term grandfathering relates to historical emissions, whereas benchmarking relates to historical electricity production.

The following table summarizes the options with respect to the impacts on existing and new renewables. If the liability is put on "generation" or "combustion" the effect mainly depends on the allocation method and auctioning would have positive effects for new renewables. Putting the liability on electricity generators in combination with benchmarks would have the highest benefits to renewable generators (existing and new). However, the combinations have to be compared with other renewable policies in place and therefore cannot be generalised.

Included installations	Allocation method	Direct effect* on	
		existing renewables	new renewables
Combustion	Auctioned		+ benefit since no permits needed
	Grandfathered		
	Benchmarking		
Elec. generation	Auctioned		+ benefit since no permits needed
	Grandfathered		
	Benchmarking	+ benefit from selling surplus permits	+ benefit from selling permits

* All categories benefit indirectly from higher electricity prices.

One of the major lessons learnt during implementation of the Directive is the variance in **interpretation** of Annex I of the EU ETS Directive by Member States (MS). The meaning of the term combustion has proven to be especially ambiguous. For example, in Germany, Poland and Luxembourg, steam crackers and melting furnaces are not covered, since the definition of combustion installation covers only activities which transform energy carriers into secondary or primary energy carriers such as electricity, heat or steam. In France, an even narrower interpretation was under consideration, which only covered combustion installations from the energy sector and no combustion installations from industry, if not mentioned separately in Annex I. This example shows that the definition has to be unambiguous. In addition there should be some kind of aggregation rules to avoid construction of a lot of small installations which fall under the threshold. Under the EU ETS the **aggregation rule** sets the criteria governing which of the installation capacities below the 20 MW_{th} threshold or other production thresholds have to be accumulated and so included under the scheme. According to the Directive, capacities have to be accumulated if they are run by the same operator, or if they fall under the same subheading in the same installation or on the same site (CEC 2003, Annex I). However this rule also needs to be defined unambiguously. For example, in Germany the accumulation rule will be less stringent than expressed by the Directive (where all criteria have to be fulfilled *at the same time*).

Where would the most effective and efficient points to place emission liabilities for the different stationary energy sub-sectors (ie. gas, electricity etc.) be - at point of emission, upstream or downstream?

There is not much experience with upstream schemes (liability at producers or retailers of fossil fuels) although some discussion has taken place in the US (PEW Centre, 2003; Hargrave, 2000). It can be argued that an upstream approach will achieve higher economic efficiency and environmental effectiveness because it permits broader coverage (if it takes the transport sector into account). This could be administratively complex as it might require close tracking of energy imports and exports. However, upstream entities may not be able to effectively pass the price signal through to energy users to enhance investment (they may apply price discrimination and give big consumers discounts). Giving free allowances to upstream entities will certainly lead to windfall profits and so is not a politically acceptable option.

A well designed downstream approach, which places the liability directly where the emissions are released (combustion installations), is potentially superior in setting dynamic incentives, increasing market liquidity and decreasing market power (Betz, 2003). In addition, an upstream approach covering the lime and cement industry as well as steel production only indirectly

through energy price increases would exclude process-related emissions that might well provide cheap abatement (for example, substituting clinker with fly ash in cement products).

Based on all the above arguments it seems best to set the liability at the point of emission since this is where the best opportunities and necessary knowledge for abatement are.

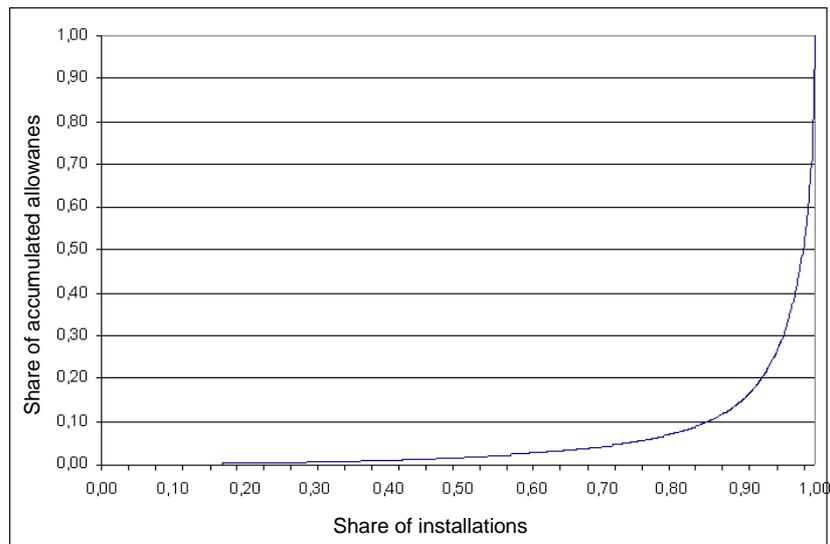
What threshold level of greenhouse gas emissions -installation capacity (eg MW), or annual output (eg. GWh) - should trigger entity liability under the scheme?

The EU experience with downstream coverage suggests that it might be more favourable to exclude small sources and focus on the larger emitters given administration and transaction costs – both for the regulator and the industry sector – and despite the loss in coverage and efficiency.

The cost effectiveness of the scheme is a function of emissions coverage (higher coverage reduces the total and average overall compliance costs per unit of abatement) and the costs of including more participants (higher numbers are assumed to increase total administrative costs). To compare both effects we analysed data for Germany on the share of allowances and the share of installations (see Figure 1): It shows that about 85% of allowances are allocated to the top 10% of installations in Germany. In addition, about 50% of installations receive only 1.6% of the total allocation. An analysis of the National Allocation Plans of all Member States (Betz et al. 2004) suggests that overall allocation will be fairly generous, at least in the first phase (2005-07) of the EU ETS. As a result, companies receive almost as many allowances as their actual emissions, and so additional compliance costs are likely to be rather low. For example, German allocation rules imply that the above-mentioned installations which annually receive less than 50,000 t of CO₂-allowances will be short by less than about 1800 t per year (assuming emissions in 2005-07 will not be higher than in 2000-2002). Thus, given projected prices for allowances in the range of 5-30 €/t CO₂ transaction costs for these companies will be high compared to costs for compliance. As a result, small companies may not even bother spending resources to identify and appraise emission abatement measures and instead play a passive role. Thus, small companies are unlikely to invest in additional abatement measures, although some of these measures may be cost-efficient. Instead, they may just buy or have someone else buy the missing allowances on the market. Since in this case these companies increase demand for allowances in the market, costs for compliance for other participants may even be higher than if small emitters had been excluded from the EU ETS (Schleich and Betz 2004). Therefore a "de minimis threshold" such as the Netherlands have implemented, based on Article 28 (opt-out provision) excluding companies with less than 25 kt CO₂/a, could improve the overall efficiency and reduce transaction costs significantly.³ The introduction of a threshold was discussed to amend the directive for the next period. However, the European Commissions seems to be reluctant to open the Directive and it is difficult to agree on the level of the threshold(s). It seems favourable to place the threshold on annual output (e.g. GWh) in order to exclude small emitters with higher installed capacity (such as back-up and reserve units) and to keep the highest incentive to reduce emissions.

³ These 139 installations (of the total 333 installations in the Netherlands) contribute less than 1.5% of the total CO₂-emissions of the covered installations.

Figure 1: Distribution of allocated allowances in Germany (2005-2007)



Source: German list of installations

Would there be advantages in allowing large downstream users to opt in to a scheme and take over liability responsibility for emissions resulting from their energy use?

An opt-in of large downstream users might cause problems with double counting and will increase the complexity of the system – something to be avoided if at all possible. However, if this would lead to abatement which would otherwise not take place due to other market failures, it might be beneficial.

What level of reporting should be required in order to establish liability and monitor compliance? Should it be at facility or company level?

Reporting should be based on the facility level since merger and acquisitions are likely to occur and data can be more easily managed. Furthermore, data verification is more easily performed at a facility level rather than company level. How the data is handled at the company level is flexible as long as each facility is listed separately.

Should reporting requirements be implemented through existing reporting regimes (eg through state environmental laws) or under a new reporting regime? And what processes would be needed to collect data in future?

Strict monitoring and reporting are a key element for the effective functioning of the regime. There are obvious advantages in common reporting requirements across all participating jurisdictions and current state environmental laws might require significant harmonisation. Thus, a new reporting regime is likely to be required.

Proposition 5: That the scheme cover all six greenhouse gases

Non-CO₂ greenhouse gases were excluded from the EU ETS for its first period largely because of measurability concerns. While considerable progress is being made on addressing these concerns, there are still large uncertainties in measuring greenhouse gas emissions from many resource extraction and industrial processes. Methane emissions associated with coal mining could be picked up in an upstream approach. However, there seems to be an inconsistency in covering all six Kyoto gases while focussing on the stationary energy sector. Properly including industrial gases such as HFC and PFC would seem to require that the scheme's scope of coverage is increased, since these gases aren't mainly emitted by the energy sector. Their inclusion through project-based mechanisms raises some important questions as discussed later in this submission.

More generally, an ETS should not be seen as a 'one size fits all' policy measure that can drive efficient levels of abatement in all greenhouse gases emitted from all activities in the stationary energy sector. Certainly, some non-CO₂ emissions might better be managed through regulation rather than inclusion in the scheme – for example, methane emissions from coal mining are regulated in many Member States of the EU. In addition there is a proposal from the European Commission to regulate the fluorinated greenhouse gases (HFC, PFC, SF₆). The proposal includes e.g. the prohibition of some uses of SF₆ or is setting quotas for the use of fluorinated gases with a global warming potential higher than 150 in new vehicles with air conditioning systems (http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003_0492en01.pdf).

Proposition 6: Allocation basis

Allocation has certainly proved to be extremely controversial in scheme's implemented to date. Auctioning seems to be the best way for allocating permits since any possible windfall gains from free allocation are avoided and the 'polluter pays' principle is applied. In addition it will give an early price signal of marginal abatement costs – a signal which still seems to be missing under the EU ETS given its grandfathering arrangements. However, to make it politically more acceptable, both special hardship cases and trade exposed sectors may need to be given special treatment. In order to preserve the integrity of the scheme and to reduce its complexity, it is likely they should be addressed by measures outside the scheme. External measures are also likely to be easier to alter as the economy adjusts and special treatment is no longer necessary,

For the first there are already some examples and experiences under the EU ETS; for example, Germany implemented criteria to assess cases of hardships on two different levels. For the trade exposed sectors special treatment might be able to be provided through border adjustment arrangements for exported products.

Questions for stakeholder feedback

What criteria should be used to select the method of allocation (eg. equity, market efficiency, cost minimisation etc.)?

Different allocation criteria might be necessary for different levels of allocation (see table below). The following levels of allocation are distinguished (DIW et al 2003):

Levels	Criteria
(1) National level	Effectiveness, political parameters
(2) Macro sectors (such as the energy sector, industry, transport, households, commerce, trade, services)	Effectiveness, efficiency, technical and political feasibility, objectivity, transparency, practicability
(3) ET segment (the totality of sectors subject to emissions trading)	Effectiveness, efficiency, technical and political feasibility
(4) ET sectors (breakdown of the ET segment, e.g. by sectors like electricity, refineries)	Effectiveness, acceptance, fairness, effect on competition, market functionality, efficiency, practicability
(5) Facility level	Effectiveness, equal treatment, fairness, protection of existing investment, efficiency, technical potential, effect on innovation, effect on incentive, legal security, planning security, economic feasibility, practicability

How long should permits be allocated for? One year or more? And why?

The introduction of long and short term allowances might have negative impacts on the development of derivative markets, market liquidity and on linking, and this proposal therefore needs to be further assessed (e.g. experimentally) before any possible implementation. Allowing for banking of allowances for use in future periods and determining the allocation rules over several periods might be a better way to achieve investment certainty. The use of borrowing within a phase might be allowed as well.

Auctioning off a proportion of future permits could provide future price signals (this is done under the Acid Rain Scheme in the US).

Should the initial allocation system differ from ongoing permit allocation?

No, it would be best to start off with 100% auctioning since this will lead to early robust price signals and appropriately set participants' expectations of future allocation arrangements. However, if political acceptability of the system depends on the allocation system, a phase in of auctioning might be an option.

If permits were to be allocated by grandfathering, what historical facility level information is available to inform such allocation?

Based on the EU experience emissions data is not available at the necessary quality (that is, verified by a third party) for more than 5 years in the past. Therefore the data needs to be collected as soon as the monitoring requirements have been implemented.

Does 'grandfathering' of permits disadvantage 'early movers'?

This depends of course on the particular grandfathering arrangements chosen, in particular the period the allocation is based on. Unfortunately, an early base period might not be feasible because of unacceptable data quality. In this case, there is potential for grandfathering to disadvantage early movers. As elaborated elsewhere, auctioning is an excellent approach to avoid issues of possible disadvantage to 'early movers' and doesn't require any assessment of BAU behaviour by companies or their motivations.

If permits were to be allocated by emissions intensity benchmarking, what sectoral output or benchmark data is available (eg market share) to inform such allocation?

Grandfathering of this form is highly reliant on good data, and there are difficulties in obtaining this both in Australia and internationally. There are also risks of participants gaming the process as they have significant 'information asymmetry' advantages over policy makers.

There are ways, however, to reduce these problems and there has been considerable work done on benchmarking since it is discussed in more detail under the EU ETS for the second phase:

- DTI (2005): EU Emissions Trading Scheme Benchmark. Research for Phase 2, Report Version One, Prepared by Entec UK Limited, and NERA Economic Consulting.
- Swedish Energy Agency (2005): Benchmarks as a basis for allocation of emission allowances in the energy sector, Stage 1, An assessment of practical applicability, Stockholm.

The quantitative data needed to allocate emission allowances based on benchmarks depends on how the benchmarks are to be calculated. Less data is necessary if the benchmark is based on best available technologies (BAT). This is how Denmark has allocated its permits to new entrants in the electricity industry - using a BAT benchmark of 342g CO₂ / kWh which reflects the need of allowances for a natural-gas based combined-cycle unit with electrical efficiency of 60%, utilisation time of 5000 hours, and an emission factor of 56.9 kg CO₂/GJ.

More data is necessary if the benchmarks are to be calculated instead from a national or international average of specific emissions in certain categories of technologies and fuels. This is how Denmark has allocated its permit to existing installations of the electricity industry using a benchmark of 560g CO₂ / kWh.

The most data of all will be required if the scheme intends to use technology-differentiated and fuel-differentiated benchmarks based on an international comparison of all plants. Most of the data needed to calculate the benchmarks would be the same as that needed for calculation of allocations at plant level based on grandfathering.

Does 'benchmarking' (or free allocation on an industry benchmark) disadvantage existing entities?

It only disadvantages inefficient or carbon intensive existing entities which would prefer grandfathering based on recent emissions. Industry benchmarks could be differentiated by fuel and even technology. However, any alteration of the proportions of different fuels used within an industry sector could affect the benchmark and therefore the size of the allocation at a later date, which would decrease the system's incentive to reduce emissions and should therefore be avoided.

If permits were to be allocated by auctioning, what kind of auctioning system should be used and why?

So far only little experience exists with auctioning GHG permits. Some experience exists under the US Acid Rain Programme and other US environmental markets. Under the EU ETS only four member states have chosen to auction part of their allowances in the first phase. However, many more member states will auction the potential surplus of their new entrant reserves. Two auctioning systems are under discussion and the UK has recently undertaken a stakeholder consultation (see <http://www.defra.gov.uk/corporate/consult/euets-salemethods/consultation.pdf>).

The effectiveness and efficiency of any auction system is entirely dependent on the overall design of the scheme. Thus the auction system needs to be assessed in much more detail and should be experimentally tested for different scheme designs before any decision is taken. It is important that the aim of the auction is not revenue maximisation but aims to establish an early and efficient price signal that reflects marginal abatement costs. Finally, an auction design for upstream participants might be different to the one for downstream participants since different information is available (e.g. on mitigation costs) which can influence the bidding process.

Should there be a transition from one system (eg administrative allocation) to another (eg auctioning)?

The use of 100% auctioning for allocation without any transition would be favourable since it would follow the polluter pays principle, eliminating any concerns about perceived inequities in the distribution of free allowances, and fully address early action. The experience with the EU ETS has shown that collation of the detailed information required for free allocation is burdensome for both Government and industry, and the use of auctioning would significantly reduce this burden. In addition administration costs for the scheme can be covered from permit revenue. A hybrid system would have much higher implementation costs since it would need to set the rules for both administrative allocation and auctioning. However, if full auctioning seems politically infeasible, the scheme should still include auctioning to the extent possible.

What approaches would businesses take to obtain capital for permit acquisition – regardless of whether through auctioning or administrative allocation (were such allocation to occur a fixed price)?

The concept of administrative allocation at a fixed price is an interesting one, but does raise the question regarding which price is chosen and why the allowances are not auctioned instead. The latter will result in efficient allocation as well as an early and robust price signal, which is important to drive innovation. If the fixed price allocation was only to be used to cover government administration costs it should be dismissed since it will provide little incentive for innovation.

How would the method of allocation impact on the operation of the emissions permit market?
Would it impact trading and market liquidity?

As stated earlier, auctioning will usually lead to less trading on the secondary market (meaning less liquidity) since it is assumed that with efficient auctioning rules the permits will be distributed more efficiently than under grandfathering. Under those circumstances liquidity is not so important since investors know they can sell their surplus allowances on the next auction. Note however that grandfathering could provide incumbents with excess permits that they have less incentive to sell (since this would indicate they were allocated access permits and so should have future allocation reduced). In addition, small companies might, under grandfathering, refrain from entering the market unless they need to buy permits since the costs of being actively involved in the market may be higher than the benefits of selling their little surplus. This might reduce liquidity.

Should existing and new entities be considered differently in allocation of permits?
If permits are auctioned or allocated at a fixed cost, to what purpose should the collected revenue be put?

If grandfathering is used, then extensive and highly complicated arrangements are likely to be required to avoid disadvantaging possible new entrants against existing market participants. This is another reason for favouring auctioning.

The collected revenue should be used to cover the administration costs of the scheme and if possible lower other distorting taxes. However, the latter might be a problem for states and therefore the revenue might be used to absorb structural changes in the short run. Revenue could also be used to support transitional technologies and approaches, and compensate particularly exposed sectors as well as people on low incomes that may be adversely affected by higher energy prices.

Proposition 7: Price ceiling penalty

Schemes will always require some form of penalty for non-complying parties. Using this penalty to cap prices in the allowance market is of course possible, however, the environmental effectiveness of the scheme is likely to be compromised. Note that the EU ETS sets a penalty for non compliance yet still requires that these parties make up the shortfall in later periods. A penalty 'escape clause', however, can make sense if cheaper mitigation options exist outside the scheme, and action to drive these 'replacement' options is implemented. However, if the proposed scheme was to cover most of the cheap abatement options outside the scheme through offsets, this argument seems redundant. Finally, since companies are more likely to seek cheap abatement options, a system with no price cap but with a broad coverage (directly under the cap and trade or indirectly through offsets) is likely to be more efficient.

Questions for stakeholders

While it is recognised that scheme design (eg targets, coverage and offsets) will be key considerations, what penalty level is likely to be needed to achieve significant emission reductions from the stationary energy sector and ensure compliance of liable parties?

The penalty level needs to be set at least double of the expected permit price. However, experiences with trading schemes in the US have shown that the price projections are not reliable and therefore it might be difficult to set a fixed penalty level.⁴

What level of price certainty is desirable? Should a penalty be used to cap prices? If so, what level should it be capped at (for example, how high should a price cap be set in relation to the marginal cost of abatement)?

Giving price certainty to industry will transfer the risk from industry to the government if a certain emissions reduction needs to be achieved. As stated before it is difficult to cap the price when all sectors are somehow (directly under cap and trade or indirectly through offset) covered by the scheme.

What precedents are there for penalty levels in similar schemes (domestic and international)? Should the penalty be set to be consistent with other Australian schemes (eg the Mandatory Renewable Energy Target or the NSW Greenhouse Gas Abatement Scheme)? Should the level of the EU penalty be taken into consideration to allow for possible future linking with the EU trading system?

What precedents are there for 'make good' provisions and what are the consequences for linking? If a make good provision is not included and the system is linked to other international schemes, how can 'bleeding' of Australian permits be avoided (ie. significant buying of cheaper permits, leaving the Australian market with insufficient permits to offset liabilities)?

Differences in compliance systems will have an impact on linking as soon as the market price exceeds one system's penalty rate. Linking schemes with different compliance systems might therefore need additional requirements. Under the EU ETS, in addition to paying a penalty (€40 per t CO₂e 2005-2007 and €100 t CO₂e from 2008 onwards), an operator has to surrender any missing allowances in later periods in order to ensure the total abatement is achieved. The penalty rate can therefore not be considered as a price cap. In contrast the Australian scheme sets a penalty rate which will function as a price cap – in effect, a tax on borrowing allowances from future years. If two such systems were linked, the fixed-price allowances will also be available to EU companies. Were prices to rise above the penalty rate in Australia, participants

⁴ Price projections for the first phase ranged from \$309 to \$981 per tonne of SO₂ (Sandor and Walsh 2000) compared to \$ 75 to \$ 210 per tonne which was the price according to US EPA in reality (US-EPA 2000).

there would have an incentive to sell allowances to other participants facing higher penalty rates (Haïtes / Mullins, 2001, p. 58). Linking these systems would encourage non-compliance in the system with lower penalties and compromise the environmental integrity of the two schemes. This situation would not occur if both systems asked participants to surrender missing allowances in the following years since this would de-couple the penalty rate from the market price. Under such circumstance differences in penalty rates would be less problematic. Different mechanisms to deal with differences in penalty rates have been assessed,⁵ but all will have negative impacts on the gains from linking since they will split the market once the lower penalty rate is reached. Therefore the most efficient solution is to harmonise enforcement regimes as was done by the EU Directive.

Should there be a make good provision?

From the point of view of environmental integrity, which is the reason the scheme is proposed in the first place, a make good provision is essential. This is also likely to be necessary for linking to the EU ETS.

How should revenue from penalties be used? Should it be used, for example, to purchase emission abatement or invest in low emission technologies?

If there is no make good provision the penalties should be used to reduce emissions outside the ET sector or purchase credits internationally. If there is a make good provision and a penalty it seems unlikely that many companies will be in non compliance. Therefore the revenue is expected to be very low and might be used for supporting the development of low emission technologies.

Should penalties be indexed or internationally linked? How often should they be reviewed?

If the schemes are linked the penalties should be harmonised. The penalty from a scheme which includes a 'make good' provision is unlikely to be reviewed if the penalty is set at a reasonable level. This also creates greater investment certainty compared to penalty rates which may be reviewed from time to time. If there is no 'make good' provision, the penalty rate should be linked to the CPI – at 4% inflation the penalty would be halved in 15 years.

⁵ One option would be to issue to the domestic companies with price-cap type penalties additional allowances up to an amount that covers the difference between their actual emissions and their initial allocation in a given year (see Blyth/ Bosi 2004).

Proposition 8: Offsets

Including different kinds of offsets in the scheme (e.g. forestry sequestration projects) can have negative impacts on environmental integrity – for example, net greenhouse emission uptake by sink projects cannot be as accurately measured as fossil-fuel combustion, and there are risks that there is leakage outside specific project boundaries (for example, reforesting one area yet simultaneously deforesting another area). Other types of projects might cause double-counting problems if indirect impacts occur in covered sectors – that is, emission reductions get counted by a project yet actually occur within a sector under the scheme's physical cap. The difficulties of project-based offset schemes within an ETS should not be underestimated. Offsets also require a baseline a credit approach that can reduce the environmental integrity of a cap and trade scheme ie. they require the calculation of a baseline based on what would have happened otherwise and so is essentially unknowable.

Questions for stakeholders

What sectors provide opportunity for inclusion through offsets - eg industrial process emissions, sinks and energy efficiency? And is the potential offset a sink or emission abatement?

As noted above, many types of energy efficiency projects might fall with the coverage of the scheme and raise double-counting problems. Ecosystem sequestration is particularly problematic as demonstrated in the problems of including such projects within formal Kyoto trading mechanisms to date (see below).

How can Governments ensure that offsets provide abatement above business as usual (ie. That they meet the 'additionality' test included in the Kyoto Protocol)?

The CDM arrangements probably represent the most rigorous and credible additionality testing to date. The additionality test tool would be a good basis to start. However, the executive board plays a crucial role in assessing additionality and it might be useful to set up a similar process nationally. A board where the different stakeholders are represented could be a way forward.

In addition to "additionality", "leakage" is crucial for baseline and credit schemes and needs to be addressed for any offset scheme. Leakage is defined as an increase in emissions outside the project boundary which is attributable to the project. Under the CDM, leakage is considered for emission reduction projects and such emissions have to be subtracted from the claimed reductions. For example in forestry projects, planted forest on the one site may be offset by deforestation on another site leading to a pure relocation and no additional benefit to the atmosphere. This type of leakage should be addressed in any future offset scheme – see below.

What approaches can be used to limit the potential risks of tree planting (terrestrial sinks) such as bushfire and disease? What safeguards should be included to ensure that sinks sequester carbon for an extended period with reasonable certainty?

Non-permanence is an issue for all bio-sequestration projects since carbon stored in biomass is at continuous risk of being emitted to the atmosphere. Under the Kyoto Protocol there are two different ways of accounting for terrestrial sinks, and they have different approaches to non-permanence and leakage.

1) Under the Kyoto Protocol Article 3.3 and 3.4, so-called Removal Units (RMUs) can be generated. The total amount of RMUs of an Annex I Party is calculated according to net removal of GHGs by afforestation and reforestation (A/R) activities and additional activities related to GHG removals by sinks. Through this approach (which is country-based rather than a project-based) the problem of leakage is eliminated (only net removal is considered) and non-permanence is

addressed (if the forest does not exist in the next period this will be reflected in the amount of RMUs since the net sum of removal will have changed). In addition RMUs are not bankable in future commitment periods and there is a limit to the total amount of RMUs resulting from domestic forest management activities for each Party. Under the European ETS such RMUs may be indirectly taken into account by Member States by setting the target in 2008-2012.

2) The project based mechanism – the Clean Development Mechanism - for reforestation and afforestation projects is only used for Non-Annex-I countries (developing countries) without a Kyoto target. Under this mechanism the non-permanence problem is addressed through the issuance of temporary credits that must be replaced with some other credit on expiry. tCERs (temporary Certified Emission Reductions) expire in the commitment period subsequent to that one when they were issued. ICERs (long-term CERs) expire after either 20 years (when they can be renewed once) or 30 years (when they cannot be renewed). Because of this replacement requirement the EU ETS has excluded the use of any sink credits (RMU, sink ERU or tCER, ICER) under the scheme so far, since no solution has been found regarding who will take on the liability for replacement if the company goes bankrupt.

Both of these mechanisms are significantly different to the NSW Scheme, which requires maintenance of the sink for 100 years, after which certificates need not be renewed and includes no provision to account for leakage. This will make it difficult for the NSW scheme to be compatible with the Kyoto Protocol, or subsequent schemes that would likely be based on its methodologies. If the state based scheme includes any offsets from sinks, the rules should be compatible with the Kyoto Protocol and account for leakage and permanence.

Should industrial, commercial or residential energy efficiency offsets be included? What are the benefits and risks of such an approach and how could double counting of emission reductions be avoided?

For most energy users, the impact of an ETS on decisions regarding energy efficiency will only be felt through increasing energy prices. A range of market failures and barriers limit the impact that such price increases will have on driving economically efficient levels of energy efficiency. This doesn't, however, mean that its direct inclusion in the ETS via offsets is appropriate – there are other policy options such as regulation, assistance with upfront costs and education that might be far more efficient.

As above, estimation of the baselines for energy efficiency projects is especially fraught – how is it known what would have happened otherwise, especially if energy prices are not static but for a variety of reasons (ETS, impacts of peaks etc.) increase?

To avoid double counting, countries like Bulgaria and Rumania are setting a special reserve under the national allocation plan which will be used for allocation to energy efficiency projects. The reserve would need to be taken from the proposed allocation to electricity utilities, since they will gain from energy efficiency measures.

Proposition 9: Mechanisms to address adverse effects and structural adjustment

The impacts of an ETS on stakeholders can be difficult to assess. Furthermore, these impacts are the entire point of introducing such schemes – they are meant to drive change by creating adverse impacts on emitters, and opportunities for participants who can reduce emissions. Possible efforts to address adverse impacts must always be done in the light of this – their appropriate role is to aid transition, not insulate participants from having to change.

It is difficult to define what exactly is meant by trade-exposed and any arrangements to aid such sectors will likely see many types of participants arguing that they fall within this category. Information asymmetry makes it difficult for governments to assess the real impacts of ETS on such participants.

Where it is appropriate for transitional support to be provided, transparency of such support is a key issue. Rather than using grandfathering or other such arrangements within the ETS, delivering such support through external, explicit and transparent mechanisms is desirable.

Finally, it should be kept in mind that adverse effects for trade exposed sectors might best be addressed by measures outside the ET scheme rather than trying to fix it within the scheme. External measures are also likely to be easier to alter as the economy adjusts and special treatment is no longer necessary. Auctioning the permits and using the revenue for structural adjustments seems to be the best option to deal with this problem. As stated above, revenue could also be used to support transitional technologies and approaches, and compensate people on low incomes that may be adversely affected by higher energy prices.

Proposition 10: Early action & new entrants

The criterion of "Early Movers" is considered important with regard to acceptance, political consistency, aspects of competition and distribution. The best option to reward early movers is to auction the permits since early movers would be favoured automatically. If auctioning can't be implemented, the second best option would be allocating permits on the bases of benchmarking as defined above. If neither of those options can be implemented and permits are grandfathered, no special "credits for early action" should be given, since it is almost impossible to determine early movers on a case by case basis (which will also provide incentive for liable parties to lobby for each and every installation – significantly increasing government administration costs).

It is extremely difficult to identify participants who have undertaken early action when considering transition approaches. Even where actions have been undertaken as part of a previous scheme such as NSW GAS, there is little guarantee of additionality that would deserve such credit. Auctioning of all allowances solves all these problems for actions undertaken in sectors covered by the scheme – previous abatement actions will reduce the number of allowances that have to be purchased by these participants. Similarly the problem of new entrants and closures could be solved by 100% auctioning. If free allocation must be used, experience with the EU ETS suggests that any free allocation to new entrants should be based on Australia-wide harmonised benchmarks in order to prevent any distortions.

Questions for stakeholders

Early mover

What criteria should be used to define an 'early mover'? What period of time should be considered in defining an early mover?

Should the definition of an early mover also apply to an organisation that has implemented energy efficiency measures prior to the commencement of the scheme?

What level of documentation should be required for an organisation to demonstrate that it satisfies these criteria?

Should early movers be protected from disadvantage and how could this practically be achieved?

Which methods of permit allocation advantage or disadvantage early movers? Are additional measures required for early movers under different methods of permit allocation (eg. grandfathering, benchmarking or auctioning)?

The major reasons that favour taking early action into consideration seem to relate to questions of political **consistency, aspects of competition and distribution** and – to some extent as a result of that – an acceptance that the emissions trading system is sound. Since it is preferable that companies continue to implement environmental protection measures on a voluntary basis, it is vital for reasons of political consistency to avoid a situation in which companies are put at a disadvantage in some way or another as a result of early endeavours of this kind. In this context, the consideration of early action would have to apply to measures that go beyond business as usual – however that is defined. Regarding competition and distribution aspects, significant impacts can occur for companies depending on how their (long-term) reinvestment cycles fall compared to the beginning of the trading period. If they are at the end of the reinvestment cycle at the time the ETS is introduced, they will profit more quickly as they are able to invest in more efficient technologies. If they are just at the beginning of the reinvestments cycle and permits are e.g. grandfathered based on recent years, they will only be able to invest in later periods. This might cause competition distortions and impact on distribution of wealth.

However, it is important to bear in mind the fundamental fact that it is not necessary to take early action into consideration at all. Neither the effectiveness nor the efficiency of the emissions trading system will be improved by taking early action into consideration. Similarly, the number of emission allowances allocated to the totality of installations covered by the emissions trading system does not change as a result of any kind of consideration of early action. Thus, if additional emission allowances are allocated to installations in recognition of early action, the number of emission allowances allocated to the remaining installations will be reduced correspondingly.

To address this competitive disadvantage of carbon-efficient installations, different methods exist, all depending on the chosen allocation rules.

The **best option** would be to **auction** all permits. In such a situation carbon-efficient installations will benefit from having to acquire fewer permits and would automatically be rewarded for their early action.

The **second best option** would be to allocate permits for free based on a uniform **benchmark** where allocation is based on electrical output not emissions. In such a situation carbon-efficient installations will benefit from having to acquire no or fewer permits or would even be able to sell surplus permits and thus would automatically be rewarded for their early action.

The **least favourable option** would be a cost-free allocation of emission allowances on the basis of historical emissions data, here the reference period (baseline period) plays a decisive role in the distribution system. If – particularly for reasons of practicability or in order to take processes of growth and structural change into account – a current *base period* is used, early action can be accounted for by **case-by-case decisions** that means early data will be limited to the number of installations in question – and thus the problem of availability of data and practical categorisation – could be significantly limited. However, since there should be no account for general processes of shrinkage and structural change (lower sales of electricity, plants being shut down and not replaced etc.) or for measures where state subsidies have been taken up, the provisions will become more complex (see DIW et al, 2003). Further differentiation must be made within the reduction measures if they are motivated by climate change concerns – in other words are additional in character - by contrast with those that are merely part of *business as usual* and might have been necessary anyway for other reasons.

Particularly due to the complex nature of the early action problem, the consequences of taking it into account have great significance for the *practicability* of the system. Any additional regulations to reward for early action should therefore remain proportionate to the actual problem.

Therefore it is not surprising that under the European Emissions trading scheme only very few European Member States have actually taken early action into account. The UK and Finland have even stated that it is impossible to consider early action in an objective, transparent, non-discriminatory way at the installation level (UK draft NAP, p. 22; Finnish NAP p. 28). Member States have - if at all - only taken early action automatically into account through the use of longer (or earlier) base periods (e.g. Ireland, UK, Luxembourg and Slovenia). In some other countries (Austria, Netherlands, Denmark, Lithuania), using benchmarks favours efficient installations and thus recognises early action automatically. In Italy allocation is based on the share of production in a sub-sector and will thus account for early action implicitly. Of all former EU 15 member states, Germany has accounted for early action the most generously. Dating back as far as 1994, new or modernised installations may – under certain conditions – benefit from a compliance factor of 1.0 (instead of 0.926) for 12 years afterwards. That means their allocation will not be reduced by 7.4% in 2005-2007. However, this rule has made Germany's allocation plan more complex and the allocation for existing installations with no special allocation conditions quite tied (such installations will need to buy). Based on this experience it is better to choose an allocation process which takes early action into account automatically (benchmarking or auctioning) and refrain from any case by case rules.

New entrants

Should new entrants have access to the same permit allocation as existing parties? If there are different rules for existing and new entrants, when and how should the differentiation be made? Should expansion of existing entities be subject to the same rules as new entrants? What mechanisms could be used to provide sufficient investment certainty to ensure that new investment is not deferred? What length of time is required for such mechanisms to provide reasonable investment certainty? What length of time with respect to return to capital is usually used for consideration of new investment in the energy sector?

The new entrant and closure rules will have major impacts on the scheme's innovation incentives (Schleich and Betz 2005). Since investment in low carbon technologies is one of the major aims of the scheme it is important to be aware of the following interdependences. If newcomers have to buy allowances on the market, strong monetary incentives exist to implement energy-efficient technologies since these technologies require fewer allowances to be purchased. If newcomers receive allowances for free, the incentives to use cost-efficient technologies are less pronounced and depend on the actual allocation rules. If the allocation relies on uniform product-based benchmarks (t of CO₂ per kWh) there are strong innovation incentives to invest in the most efficient measures within a given product group: Investments in technologies which require less specific emissions than the benchmark generate extra allowances which may be sold on the market. By contrast, technologies which are less efficient than the benchmark, incur additional costs for the purchase of allowances. Note that within a product group, incentives for innovations are independent of the level of the benchmark.⁶ However, the more sub-benchmarks there are within a product group or within a technology group (e.g. fuel-specific or technology-specific benchmarks), the smaller will be innovation effects, since innovation incentives are limited to the sub-groups. If newcomers receive an amount of allowances which always equals actual emissions of the new technologies, incentives for innovation are zero, since it does not pay to use energy-efficient technologies.

Therefore the allocation to new entrants should be built on the following list of priorities, reflecting economic efficiency also from an inter-temporal perspective, and the issue of fairness:

Best option: Allocation to existing installations contains a high proportion of auctioning, with no free allocation to new entrants. This should be implemented in parallel with a closure provision which allows facilities to retain their allowances.

Second best option: If permits are mostly allocated for free to existing installations the following options;

1. new entrants should receive a free allocation based on benchmarks;
2. if the first two approaches (auctioning or benchmarking) are not accepted for political reasons, a transfer provision should apply;
3. free allocation to new entrants based on fuel-specific benchmarks for emissions is not appropriate because the intended incentive structure will be largely eliminated.

As a starting point, less ambitious product benchmarks (higher than BAT for the least carbon-intensive fuels) are more acceptable for encouraging new investments if fuel-specific benchmarks can be avoided and the allocation to existing plants is comparatively generous. However, the allocation according to benchmarks for new installations should be continuously decreased over time, as it should be for existing installations (i.e. phase in of auctioning).

⁶ The profits, however, do depend on the level of a benchmark: the more stringent the benchmark, the lower the profits. Thus, the quantity of allowances allocated for free may well have an impact on the decision of whether to invest in a particular technology or not.

Plant closure

Bearing in mind that the effective and comprehensive identification of plant closures will not be possible (mothballing, 'cold reserve', etc.) and that generous plant closure provisions encourage (early) replacements of old plants, the operators should retain the allowances allocated for the duration of the phase.

Our view regarding investor certainty is expressed earlier in this document.

PROPOSED NEXT STEPS

Questions for stakeholders

Do the ten key design propositions provide a sound foundation for a national scheme? What other core elements are required?

The ten design propositions are a promising basis for developing an effective and efficient multi-state ETS in Australia. However, they leave many key design choices open at this stage. Furthermore, many of these design choices interact with each other, and the overall scheme design can therefore only be assessed with regard to all of them. We would argue that additional core elements should also include a formal and transparent design process itself, and greater attention to the issue of policy robustness within this multi-jurisdictional framework.

Does your organisation have any analysis that it is prepared to share with the working group to assist its deliberations (confidentially or otherwise)?

All our papers can be downloaded from the CEEM website: www.ceem.unsw.edu.au. We are happy to share our experiences with you or undertake further assessment; for example, experimental testing of some of the design propositions.

Are complementary measures required or would emissions trading be enough to ensure future emission reductions are achieved cost effectively? Which of these measures are new and should be given priority implementation prior to the first phase of a trading scheme?

Idealised market theory suggests that a universal ETS is the only climate change policy required and that other climate change policies will not improve environmental effectiveness, cannot reduce the cost of meeting this target and will almost certainly increase it. The reality of course is that ETS have important limitations that will require other policy measures. In particular, these markets are unlikely to appropriately 'price' current uncertainties in both what level of emissions reductions will be required to protect the climate, and the potential of emerging abatement technologies ie. even a 'perfect' market cannot price in an unknown future cost.

Key policy areas would seem to include 1) improving ETS's static efficiency by correcting other existing energy market failures such as those seen in energy efficiency and infrastructure provision, 2) improving ETS's dynamic efficiency through separate support for innovation and diffusion of emerging emissions abatement technologies such as renewables and energy efficiency, 3) other policy objectives such as energy security and equity and 4) compensating for the inevitable failures in ETS design.

Emissions trading is, in some ways, very well suited to policy frameworks with a mix of policy measures because the price of allowances is set by a market that can respond to these other policies. For example, strong policy support for renewables can offset fossil-fuel generation which therefore reduces the need for allowances. The price of allowances should then fall in response to this reduced demand. These interactions can however be extremely complex and surprises are always possible. In particular, inefficient markets can blunt these price responses and some members of society may end up paying for emission reductions twice.

Finally, carbon taxes have some highly desirable characteristics, including simplicity and adherence to 'polluter pays' principles. Although it is sometimes claimed that such taxes are politically infeasible, they remain an option for pricing greenhouse emissions should ETS schemes prove impractical or excessively unwieldy in particular sectors or more generally.

What level of compliance monitoring and enforcement is necessary to ensure the effective functioning of the scheme?

Robust monitoring and verification of reported emissions is a key element to ensure the effective functioning of the emissions trading scheme. Accuracy in calculating the emissions is necessary to ensure that traded units are homogenous goods. However, a balance of accuracy and cost effectiveness has to be found to ensure that a high accuracy is not achieved at the expense of cost-effectiveness. For example, under the EU ETS the requirements for accredited test institutes were regarded as unnecessarily expensive.⁷ Inclusion of fugitive emissions like methane from coal mines will make it even more difficult to ensure the necessary accuracy of the data. Therefore a very detailed assessment of the costs and practicability of the inclusion of other GHG is necessary before such a decision can be made.⁸

Standardised verification requirements are important to ensure the quality of the emissions data. It is recommended to consider the recently finalised standards ISO 14064 Part 3 and ISO 14065 (still under development) as a national basis for verification.

Are there any other issues that you think should be considered in the next phase of investigation and analysis?

The next step of investigation and analysis should try to assess the different provisions in a more holistic approach. Since all the features will somehow interact they can not be regarded separately. The experience with the EU ETS showed strong and significant interactions between the allocation to existing installations, the allocation to new entrants, the provisions on plant closure and the allocation in subsequent periods. This highlights that the isolated assessment of single provisions could lead to counterproductive effects in the scheme as a whole.

Much more detailed assessment is needed of the advantages and disadvantages of linking to other schemes since it might have considerable value but will reduce the available design options because of the need for some harmonisation. The key design features of the proposed Australian scheme which might cause problems are the inclusion of sinks and non-CO₂-gases, a lack of a requirement to 'make good', and different allowance lifetimes. The benefits of these features need to be compared with the benefits from linking (efficiency gains, less market power potential, more market liquidity) before further decisions are made.

⁷ See Monitoring guidelines Stakeholder review:
http://europa.eu.int/comm/environment/climat/emission/implementation_en.htm

⁸ See DEFRA: Guidelines for the Measurement and Reporting of Emissions by Direct Participants in the UK Emissions Trading Scheme: <http://www.defra.gov.uk/environment/climatechange/trading/uk/pdf/trading-reporting.pdf>

OTHER SCHEMES

Questions for stakeholders

Should a national scheme replace some or all of the existing schemes or co-exist with them?

The existing Australian schemes vary greatly in design, and in potential interactions with a national ETS. MRET and the Queensland 13% scheme might co-exist reasonably comfortably without particular transitional arrangements – such is the case with renewable support mechanisms in the EU.

The transition from the existing ‘baseline and credit’ ETS in NSW and the ACT to an inter-jurisdictional ‘cap and trade’ scheme, however, is likely to be problematic. The existing scheme is mandated to run to 2012 and there is limited forward trading of NGACs out to this period. An inter-jurisdictional scheme will need to be introduced before 2012 if it is to contribute to Australia meeting its Kyoto requirements. Unfortunately, it is difficult to reconcile an ETS trading physical emissions with another that trades hypothetical ‘emission reductions’ from BAU baselines.

Transition options include cancellation of the NSW GAS prior to commencement of the national cap and trade scheme, or accepting a period of time where both schemes run in parallel. The key issues for the first option are the impacts of cancellation on those participants who undertook real abatement actions and, in particular, how these actions might be compensated within the cap and trade scheme. Key issues for the second option are overlaps or double counting, and whether to permit trading between the systems.

There is some international experience in such transitions with the UK ETS and JI projects established before the EU ETS. However, these schemes have better designs than the NSW GAS, which has no physical cap and questionable environmental additionality. Full acknowledgement of its claimed abatement in any ‘cap and trade’ scheme would adversely impact environmental effectiveness and equity. The best option is probably cancellation of the NSW GAS prior to commencement of a national scheme, with full auctioning of permits to account for any early action that might have taken place.

Accepting a transition period where both NSW GAS and a national ETS were operating may be unavoidable but raises many complications – in particular, double counting of emissions reductions. Opt-out provisions won’t work well given NSW GAS problems and should therefore be avoided.

Should certificates be fully fungible (or tradable) between schemes?

No, since trading across schemes by making e.g. NGACs fungible with allowances is likely to damage the effectiveness and fairness of the cap and trade system.

Are there any elements of existing schemes that should be adopted into a national scheme?

Project-specific ‘domestic project’ arrangements outside the new scheme’s coverage with strict additionality tests might be appropriate as a residue of the NSW GAS.

Should penalties for all the schemes be set at the same level?

If linking the schemes can't be avoided, penalties need to be set at the same level (see explanations under linking in proposition 7).

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