

**NSW Government Submission to Garnaut Review**  
**Emissions Trading Scheme Discussion Paper**

**Executive Summary**

The NSW Government has been a policy leader and innovator in driving the Australian climate change policy response, and is one of the few governments in the world with practical experience of developing and implementing a mandatory greenhouse gas emissions trading scheme. The successful Greenhouse Gas Reduction Scheme (GGAS), introduced in 2003, was one of the first mandatory greenhouse gas emissions trading schemes in the world and achieved a reduction in CO<sub>2</sub> of 13.8 million tonnes.

NSW supports the view that greenhouse emissions should be reduced. The Garnaut Review and others, including the Stern Report, argue that the expected costs of abatement are less than the expected costs of climate change. Given the significant impacts of policies to reduce carbon emissions on the energy sector, however, a key challenge for policy makers is maintaining security of energy supply during the transition period. Events such as brown outs and blackouts would not only have a significant negative impact on the economy, they would quickly see a fall in public support for carbon reduction measures.

It is self evident that the costs and economic impacts of an Australian Emissions Trading Scheme (AETS) are likely to be felt far more quickly than the environmental benefits of avoided climate change due to an AETS.

This approach demands that action not be taken in a way that creates unnecessary economic risks or imposes excessive costs on the current generation, who risk shouldering a disproportionate economic burden to secure long term environmental benefits by bearing the impact of any economic shocks the introduction of an AETS may create.

Prudent risk management demands that the greater our risk aversion, the stronger the policy response. It is the submission of the NSW Government that the Garnaut Review's Emissions Trading Scheme (ETS) Discussion Paper does not sufficiently acknowledge that the consequences of the AETS are very uncertain, with substantial risks for the Australian economy broadly during the transition period.

The AETS will put a price on all greenhouse emissions (subject to coverage) and, in the short- to medium-term, have cost impacts well in excess of abatement costs, recognising that in the long term, the opposite is expected to be the case. The AETS is intended to induce technology change through relative price changes. However, the AETS, combined with the Mandatory Renewable Energy Trading (MRET) scheme could, if not appropriately designed and managed, cause costly economic dislocation and disruption to power supply.

Carbon markets are a creature of government. Consequently, carbon markets are, and will remain, vulnerable and sensitive to government policy changes. It is therefore crucial that the Commonwealth operates in a consultative and open manner both in developing the emissions trading scheme, and in its operation.

The challenge for policy makers is to design and implement an AETS that meets emissions targets over the next several decades, achieves the substantial economic adjustments required

in the least disruptive manner, whilst avoiding price instability and electricity supply reliability problems. It is imperative that the type of scheme adopted is at least cost to the economy.

If the AETS caused volatility to the energy sector that had the impact of making electricity prices difficult to predict, investor confidence would be affected, putting at risk the investment in new lower emission technologies required. This would have the opposite effect of that intended by the policy change.

As a policy 'shock' the AETS has been likened to the imposition of the GST or a major interest rate hike. However, these examples do not share the distinctive characteristic of the AETS; that is, that the direct impacts of the AETS could lead to a significant change in asset values and investment returns.

The short- and medium-term impacts on the Australian energy sector cannot be dismissed lightly. Estimates of the possible range of losses for individual generators require modelling of the National Electricity Market (NEM). It needs to be established how large the value loss for some high-emission generators could be under possible abatement cap scenarios.

The Australian Constitution confers on the Commonwealth the power to acquire property on just terms. In establishing any AETS, the Commonwealth will need to give careful consideration to ensuring that any aspect of the scheme which may be characterised as involving an acquisition of property complies with this requirement to provide 'just terms' compensation.

Careful consideration of the impacts on future investment is needed in the design of the AETS. If potential investors see the Australian Government accepting the loss of significant asset value as an appropriate outcome of its policies, they would be concerned it may do so again. The negative perceptions of overseas investors, in particular, would be exacerbated to the extent that the losses were anticipated and concentrated on a small number of entities. There would be a resulting increase in the risk premium demanded for investments in long-lived assets in the Australian power sector. Given the investment demands of the power industry worldwide, investors could seek out alternatives. Risks to investment in the Australian power industry could have implications for energy security.

The NSW Government considers that parties who suffer disproportionate loss due to the introduction of the AETS should be compensated. Adjustment assistance may also be needed for households, in particular low income households, to manage increased energy prices as a result of the AETS and to address structural changes to the economy driven by the AETS.

The principle of offsetting disproportionate loss is consistent with the democratic norm that just compensation should be provided for acts of government that have significant adverse impacts on a property right, and could help extinguish additional sovereign risk. Compensation, which could be in the form of a free initial allocation of permits, is not a transfer of wealth to recipients, but offsets the transfer of asset value away from them. The NSW Government accepts that some parties would remain worse off even after redistribution mechanisms, including some high emission generators. However, the principle captures the desirability of moderating extreme negative outcomes.

The NSW Government supports the position taken in the discussion paper that transitional financial assistance should be provided to account for distortions arising from major trading competitors not adopting emissions limits (or pricing).

The NSW Government also supports the Discussion Paper's recognition of investment in research, development and deployment of low emission technologies as amongst the priorities for use of auction revenue. In view of the Australian economy's current dependence on coal, a priority for RD&D funding is carbon capture and storage to assist Australia to transition to a low carbon economy.

The discussion paper identifies agriculture and forestry as two key sectors that, due to technical constraints, are unlikely to be fully covered by the ETS at the outset. This submission comments on general ETS design considerations, with reference in particular to the characteristics of, and issues affecting, the agriculture and forestry sectors.

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## 1. Guiding Principles for the design of the AETS

The Garnaut Review's *Emissions Trading Scheme Discussion Paper*<sup>1</sup> states on page 57 in summary that: "In developing the ETS design, it has a singular objective: To provide a transactional space that enables the transmission of permits to economic agents for whom they represent the greatest economic value.

*One clear objective allows the development of an ETS that is simple in design, efficient in operation, and easily comprehended by market participants and the wider community. A number of guiding principles should be applied in order to achieve this objective, namely: scarcity, tradability, credibility, simplicity and integration. These principles define a solid framework within which an efficient and effective market can be designed."*

Page 14 states that successful implementation will result in observable outcomes such as:

- Ø *low transaction costs,*
- Ø *price discoverability,*
- Ø *emergence of forward markets and other derivatives,*
- Ø *investor confidence, and*
- Ø *low cost abatement spread over time in a way that minimises the present value of costs.*

The NSW Government supports the implementation of regulatory policies to reduce our greenhouse gas emissions including the introduction of a national emissions trading scheme (hereafter referred to as the AETS).

The five "guiding principles" identified for the AETS by the Garnaut Review are appropriate, but incomplete. *Economic efficiency, risk management and distributional equity* should also be included. The discussion paper stresses the importance of economic efficiency, and the necessity for governments to address adverse distributional impacts, contending that high permit prices could have "major effects on income distribution" (p6). However, given that the AETS is a complex regulatory scheme, the paper gives insufficient attention to the management of associated risks. In particular, if there are significant negative balance sheet impacts, this could have adverse consequences for investment.

## 2. Risk Management Considerations in Implementing an AETS

### 2.1 Scheme Design

Scheme design will influence the allocation of risk. The Garnaut Review has not considered the alternatives to a cap and trade model that could be implemented to achieve a given abatement target. The main alternatives, the baseline and credit approach as used in the NSW GGAS, and the Output Based Allocation (OBA) model, have different properties in terms of price impacts and the direct incentives they provide to consumers with consequences for economic impacts.

A cap and trade scheme increases the cost of high emission activities, while a baseline and credit scheme changes relative prices by, in effect, reducing the price of low emission activities. A base line and credit scheme transmits price signals to consumers more directly

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<sup>1</sup> The Garnaut Review's *Emissions Trading Scheme Discussion Paper* is referred to as "the Garnaut Review's ETS paper" and "the discussion paper" throughout this submission.

than cap and trade. An output based permit allocation model, which operates within a cap and trade framework, is a compromise that both increases somewhat the cost of high emission activities and lowers the cost of low emission activities, with some possible loss of allocative efficiency.

In theory, the abatement costs of cap and trade and baseline and credit schemes should be similar, but the financial transfers effected within a cap and trade scheme are much larger than the main alternatives. These large transfers are a key source of risk. The Terms of Reference for the Garnaut Review include the Review advising on “*the costs and benefits of various international and Australian policy interventions on Australian economic activity*”. A fuller discussion of the characteristics of the alternative ETS models is desirable to substantiate why the cap and trade model is the Review’s preferred approach.

## 2.2 Weighting Risks

The discussion paper recognises various risks associated with the AETS, including:

- the risk management needs of firms and participants (p12, p36, p49);
- risks associated with the credibility of the AETS (p33);
- risks for trade exposed emissions intensive industries (TEEIs) (p38);
- the role of secondary permit markets in managing market participants’ risk (p50);
- possible *sovereign risk* (p54); and
- stagnation and decline risk for regional communities (p54).

The consideration of macro economic impacts in the discussion paper concludes (p56): “*Smooth operation of a market-oriented ETS, as described in this paper, is likely to be associated with average rates of growth in output and incomes that are only slightly below what might have been expected in the absence of greenhouse gas mitigation — abstracting entirely from the potential for climate change itself substantially to reduce incomes. The risks to prosperity from this major reform lie in the potential for instability and lack of confidence in the arrangements, hesitant approaches to investment in low emissions products and processes, and large fluctuations in permit prices deriving from disputation about the fairness of the scheme.*”

This assessment does not sufficiently acknowledge that the consequences of the AETS are very uncertain, with risks for the Australian economy broadly. The need to carefully assess and manage the economic risk is the foremost omission in the discussion paper. The AETS is a major market-based regulatory scheme without precedent. If the risk management processes for the scheme are inadequate, the AETS when combined with the MRET scheme and other major abatement policies could cause fundamental and costly economic dislocation.

All identifiable potential risks associated with the AETS and related abatement policies must be fully assessed. Foremost amongst these is the risk to the reliability of electricity supply. It is important to recognise that the current supply and demand balance in the electricity sector is quite tight and that there is a need for significant new investment over the next few years to ensure adequate reserve margins are maintained (see Box 1). This is additional to the investment needed to meet environmental objectives. Therefore, it is essential that investment risk that could be created by the AETS is adequately managed.

The implementation of the AETS is fundamentally a risk management measure. Climate change is a global problem with very uncertain consequences, locally and globally. Underpinning the argument for abatement measures is the view that the expected costs of

abatement are less than the expected costs of climate change. Prudent risk management demands that the greater our risk aversion, the stronger the policy response.

As Australia's greenhouse emissions are only a small proportion of the total, the costs an AETS will impose are likely to be more immediate than the longer term benefits of avoided climate change due to an AETS. There is strong public support for Australia to act, and a willingness to bear costs necessary to satisfactorily manage climate change risk. However, action should not be taken in a way that creates unnecessary economic risks and imposes excessive costs on the current generation.

The discussion paper proposes that the AETS be designed to enable emissions targets to be met with certainty, which it argues would enhance scheme credibility and international integration. It therefore prefers binding targets over a price ceiling (which would place a floor under the downside economic risks). The paper proposes that price risks be managed through permit derivative markets in combination with banking and borrowing allowances. However, this view regarding scheme credibility is questionable. The AETS is likely to be recognised as a highly credible abatement scheme, irrespective of the transitional mechanisms used to deal with possible instabilities that could result from unexpectedly high permit prices. Further assessment is required to determine the best mechanism for managing the economic dislocation risks that could arise from high permit prices.

Policy options must be assessed on their measurable costs. The challenge is to implement an AETS that meets emissions targets over the next several decades, achieves the substantial economic adjustments required in the least disruptive manner, whilst avoiding price instability and electricity supply reliability problems.

#### **Box 1.**

##### **Electricity Supply and Demand Balance**

The investment needs of the electricity supply industry fluctuate. In NSW, there has been an extended period of high reserve margins following heavy investments in base load plant committed in the 1980s. However, this period is coming to an end and, as identified by the Owen Inquiry, there is an impending need for new base load capacity. Given the lead times for building base load plant, commitments to new investment will be required in the near term.

The National Generators Forum has estimated that \$150 billion in new capital investment will be required by 2050 for Australia to meet the emissions target of 60% below 2000 levels by 2050. This is a major investment challenge, and a source of major risk. Given a worldwide increase in demand for low emissions generation technologies, allowance must be made for increasing capital costs and delays in installing new plant, and price increases for low emissions fuels.

The 2007 NEMMCO "Statement of System Opportunities" indicates that new investment is required in all mainland NEM states to maintain system reliability levels in the short term (Queensland in 2009/10, Victoria and South Australia in 2010/11 and NSW in 2013/14), and that by 2016/2017 approximately 6,000 MW of additional capacity will be required across the NEM.

### **2.3 Implications of the AETS for Energy Security**

As the AETS is a regulatory impost without precedent, it must be implemented with care. It will put a price on all greenhouse emissions (subject to coverage) and, in the short term, have cost impacts well in excess of abatement costs (recognising that, in the long term, the opposite is expected to be the case). The AETS is intended to induce technology change

through relative price changes. In particular, the AETS will increase the costs of energy. However, the increase could be excessive if implementation is not handled correctly. Electricity is a unique commodity, because it has to be manufactured at the moment of its consumption through a capital intensive process, and is characterised by significant network related market failure requiring ongoing regulatory interventions.

Australia has a relatively energy intensive economy and the current supply and demand balance is tight. The AETS combined with the MRET should be designed and implemented to avoid unnecessary ‘stranding’ of assets or destruction of significant capital value, because of the adverse impacts these could have for industry stability and the reliability of electricity supply (see Box 2).

New investment must come from either existing market participants, or other parties. Their willingness to invest will be influenced by their perceptions of risk, and expected returns. The requirement for generators to acquire sufficient permits in the initial auction to cover their emissions raises a financing issue, with potentially significant consequences for generators’ balance sheets and their capacity to make new investments, as well as ongoing permit trading, which is discussed in detail in Box 3. If the implementation of the AETS is not handled correctly, it could cause volatility, making the impact on electricity prices difficult to model (predict), undermining investor confidence. This would put at risk the required investment in new lower emission technologies.

## **Box 2.**

### **The AETS - an Economic Shock**

In theory an ETS should achieve abatement at least cost, as long as the transaction costs of trading permits is low, and there is adequate competition for permits. However, theory tells us nothing about the costs of abatement. The AETS will be a step into the unknown, however much care goes into the design, and combined with the MRET could have unintended consequences.

Predicting the impact of major shocks is usually difficult, and events which appear small can have unexpectedly big consequences, and vice versa. The AETS has been likened to policy “shocks” such as the imposition of the GST, or a major interest rate hike. However, these don’t share the AETS’s characteristic direct impacts that will lead to a significant change in asset values and investment returns. Also, the AETS is not a one-off impost as the emissions cap is expected to increase through time.

The AETS has also been likened to tariff reforms, which lead to relative price changes and removed economic distortions. However, tariff reforms reduced input costs and led to new types of investment that more than offset the decline of the protected sectors. This was a gradual process, and unlike electricity did not relate to a sector that provides an input to all economic activity. Also, under the AETS, much of the required new investment will have to come from within the sector that has been adversely impacted.

The AETS will change relative prices, which will promote technical change and induce structural changes. Technical change is required in both energy production processes and activities requiring energy consumption. The cost impacts could lead to wide but differential economic impacts, as energy is embodied in all economic activity to variable degrees. This is of particular relevance for the relatively high energy intensity Australian economy.

In fact, some proposed energy intensive industry projects have already been put on hold and are being reconsidered, pending implementation of the AETS.

The impacts on electricity supply are of particular significance. Electricity cannot be stored like other products. There must be sufficient generation capacity on line to meet demand continuously. Governments have a role in ensuring energy security. Real time operations and the maintenance of adequate reserve

margins will always require centralised co-ordination.

Emissions intensive generators will be heavily impacted by the AETS and MRET, with consequences for both operational and investment / disinvestment decisions. Some generators could suffer significant value loss. But while it will be desirable for emissions intensive technologies to be closed down eventually and replaced with low emission alternatives, the closure of large base load generators before adequate new capacity is in place would threaten system reliability, and lead to significant and unpredictable price volatility. The permit allocation process, combined with the use of auction revenue, could help offset some of the regulatory risk because they would provide insurance against permit price volatility. Such allocations would be a means of avoiding *disproportionate losses* from the AETS and MRET, and avoiding increasing *sovereign risk* which could have adverse consequences for investment.

### **Box 3.**

#### **Financing Implications of Acquisition of Emissions Permits.**

The size of the permit liability which will need to be financed is uncertain. The amount of cost pass through in higher NEM prices will also be uncertain.

The requirement could be large relative to generators' other costs. Emissions intensities are close to one tonne per MWh for black coal fired generators, and 1.25 tonnes per MWh for brown coal. Fuel costs for black coal are \$10-20 per MWh. Therefore, even at a permit price of \$30 per tonne CO<sub>2</sub>e, permit costs could be significantly greater than fuel costs. Fuel costs for brown coal are under \$6 per MWh, thus at \$30/t the cost of permits would be more than six times the cost of fuel. If permit prices were \$50/t, annual permit costs for each 100MW of capacity could be in excess of \$40 million for brown coal base load and \$30 million for black coal. The cost and logistics of financing the purchase of permits from the initial auction would be considerable.

Assuming by 2010 the annual emissions have increased to 300 Mt, the cost of permits across stationary sources would be:

- @\$30/tCO<sub>2</sub>e - \$9 Billion
- @\$50/tCO<sub>2</sub>e - \$15 Billion

If the initial funding is required for at least 12 months, the costs would range between \$780m to \$1.3bn spread across the businesses Australia wide, based on the above range.

For the private sector entities, a more significant issue is whether those businesses would have access to the debt market for their funding needs. As the value of the "asset" being financed and cost pass-through would be very uncertain, the additional debt impost, if it could be raised, would probably cause them to be "downgraded" by the ratings agencies. Their ratings now are split between BBB+ and below BB. This would leave them in a weak position to undertake the new investment the industry will require.

The AETS regulatory regime may change in ways that impact on permit values, but which may not recognise that a different value may have been assumed when the initial acquisition was financed.

Permit acquisitions could be equity financed, but uncertainties will still push up the cost of capital. Equity financing may be difficult to obtain given the risks and the many alternative investment options.

If stationary sources cannot pass through the full cost of permits, the result will be a loss on the revenue account for the year. For a merchant plant it may be that the recovery will be less than 100% of the cost. For financial hedges it is not clear that the existing ISDA terms for CO<sub>2</sub> price pass-through will be effective. Clarity is also needed on this matter for new hedges for terms post 2010. Power purchase agreements and similar long-term supply contracts for loads such as aluminium smelters will also need to be carefully considered as the ability to pass through permit costs may be arbitrary and inequitable.

Concerns raised by the power industry and other interested parties about the possibility of the AETS and MRET compromising energy security have largely been dismissed as rent seeking. This characterisation has been influenced by misunderstandings about the experience of the European Union (see Box 5), in particular that free permit allocations will lead to windfall profits. However, the choice is not limited to either a 100% allocation of permits or none. The goal should be to avoid disproportionate losses being concentrated on important sectors of the economy that are likely to have broader negative consequences. The scope for moderate permit allocations to put an acceptable floor under the downside risk should be considered as a matter of public interest.

## **2.4 Impacts of the AETS on Generators' Sales Volumes and Asset Values**

The Review's Interim Report argues that for "non-tradeables" sectors, including stationary energy, the cost of permits may be passed on to consumers in the form of higher prices. The AETS combined with the MRET will impact on pool prices in the National Electricity Market (NEM). Permit prices will increase pool prices whenever the marginal generation comes from a generator producing emissions. However, the emissions intensity of the marginal generator will often be well below that of higher emission plant (base load in particular). Pool price increases may often be less than the average cost of permits, and higher emission generators will not always be fully compensated for permit costs.

Furthermore, electricity prices will be affected by different factors from permit prices. It is quite likely that there could be periods of significant divergence.

To the extent that high emission generators are moved downwards in the merit order, they will supply lower volumes. In addition, higher prices in the NEM can be expected to reduce aggregate demand. Such volume losses will add to the adverse impact on asset values.

The value loss for some high-emission generators could be very large under some abatement cap scenarios, which would raise sovereign risk and erode the reliability of electricity supply. The only way to estimate the possible range of losses for individual generators is through modelling of the NEM (modelling issues are discussed in Box 4).

A major erosion of asset values driven by the AETS could result in absolute losses for the economy, and an unambiguous reduction in economic welfare. Moderating the stranding of potentially productive assets will reduce the costs to the economy as well as enhancing energy security.

## **2.5 Permit Allocations and Dynamic Efficiency**

The discussion paper relies on the Coase Theorem to conclude that the allocation of permits is a distributional issue only, and not an economic issue. The NSW Government accepts the proposition that the owner of a permit will value it at its market value whether it has been purchased or granted for free. This implies that, in general, given low transaction costs, and ignoring any financing problems, permits should end up in the hands of the parties that place the highest value on them, and is consistent with static efficiency.

Therefore, permit allocation should not affect generators' bidding behaviour in the NEM, and should not "distort" the merit order. However, the potential for economic impacts does not end there. Generators will still have to deal with uncertainty about future permit values and emissions caps, which are critical for both closure and new investment decisions. Even if

there is a forward price curve for permits, and instruments for hedging some permit price risk, there will be elements of uncertainty that cannot be insured through permit derivatives. The Coase Theorem will not hold when there is significant uncertainty about the future values of the tradable legal right, and incomplete insurance markets. This raises the possibility of economic impacts due to dynamic inefficiencies.

For example, given the uncertainties, emissions abatement policies may have to be changed. Such changes cannot be predicted now, and future Governments cannot be prevented from making changes they deem appropriate. In general, because generation assets have long lives and are a sunk cost, “regulatory risk” will cause investors in electricity supply capacity to hesitate.

There is a benefit from delaying an irreversible commitment if the regulatory environment is expected to change<sup>2</sup>. For example, the expected returns on investment are likely to be influenced by the emissions caps. If a change in caps is expected to be announced, an investor is likely to delay commitment until the announcement has been made. Such delay could cause capacity shortfalls and push up operational costs. Permit allocations are one possible means of providing some insurance against such risk.

#### **Box 4**

##### **Modelling the AETS**

The design of the AETS and MRET is being informed by Commonwealth Treasury economic modelling. This is essential work, including for the purposes of assisting decision making on permit allocations. Nevertheless, the predictive power of the available models is limited, especially for the transition and possible dislocation that could be caused by such an unprecedented regulatory scheme. Models are only a guide, often to where information is most lacking.

Assessing possible stationary energy sector scenarios must utilise dynamic models of the NEM incorporating the dispatch rules, short and long run cost information and lead times for all available technologies, network system constraints and other operational characteristics, and behavioural assumptions of participants.

There are several proprietary models of the NEM that could be used to assess value impacts on individual generators. Various combinations of design parameters, emissions caps, costs, and behavioural assumptions must be modelled. Using more than one of the NEM models could be useful to get a sense of the main risks, and the factors that outcomes may be most sensitive to. A clear picture for a preferred AETS design may not emerge because of the wide range of variables. Nevertheless, such modelling should assist the development of strategies to manage the risks.

A weakness of all systems models, including those intended to assess the broad economic impacts of proposals, is that they cannot be validated through controlled experiments. Furthermore, economic models have to have aggregated industry and regional structures, and can only be informed by past experience. Models alone cannot deal well with major transitions and discontinuities, especially where there is little relevant past experience to provide guidance.

It cannot be assumed that, because the AETS is a designed regulatory scheme, informed by modelling, all risks can be adequately managed and unintended consequences dealt with through retrospective adjustments.

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<sup>2</sup> Benefits of this nature are referred to as “real options”. In theory, the market should attach a positive financial value to keeping investment “options” open if material new information is expected, and there is abundant empirical evidence that this does happen in practice.

To help discipline adjustments to the AETS and other abatement measures, the Commonwealth could guarantee that it will mitigate any future disproportionate cost imposts due to its regulatory decisions. This would help insure the energy security risk.

## 2.6 Sovereign Risk and Investor Confidence

The discussion paper states: “*The Review does not recognise the introduction of the ETS as a “sovereign risk”*” (p54) because “*the introduction of an ETS does not involve government exploiting its sovereign status to avoid contractual obligations.*”

The concern in relation to “sovereign risk” is not that the government will break contracts and act in bad faith, but the possibility of value losses increasing the cost of capital. If generation businesses suffer a significant loss of value due to the AETS, it is highly likely this would have a negative impact on investment in the industry. Much of the existing generation capacity was committed to at a time when the prospect of a price being put on greenhouse emissions was remote or non-existent, thus compensation is both necessary and appropriate. If significant asset value losses are allowed to stand, with their weaker balance sheets, the financial capacity of the industry to invest in new generation will be reduced, exacerbated by the consequences that the financing of permit acquisitions may have.

The Australian Constitution confers on the Commonwealth the power to acquire property on just terms. In establishing any AETS, the Commonwealth will need to give careful consideration to ensuring that any aspect of the scheme which may be characterised as involving an acquisition of property complies with this requirement to provide “just terms” compensation. Even where there is not an acquisition of property under the Constitution, as a matter of policy, it is appropriate that compensation be considered wherever a Government initiative would result in a diminution of property rights or a significant decrease in asset values.

Careful consideration of the impacts on future investment is needed on the design of the AETS. If potential investors see the Australian Government accepting as an appropriate outcome of its policies the loss of significant asset value, they will be concerned it may do so again. The negative perceptions of overseas investors in particular will be exacerbated to the extent that the losses were anticipated and concentrated on a small number of entities. There will be a resulting increase in the risk premium demanded for investments in long-lived assets in the Australian power sector. Given the huge investment demands of the power industry worldwide, investors will have plenty of options. Investment in the Australian power industry could fall short, which could be very costly.

This is more than a theoretical point. The real threat of sovereign risk is demonstrated by comments from existing players in the Australian energy sector. TRU Energy Managing Director, Richard McIndoe, in recent correspondence to the NSW Premier and others raised the concerns in these terms:

*Australia has enjoyed political stability and the perception of low sovereign risk. This has delivered strong investment at a proportionately lower discount rate compared with other countries. International and local investors and lenders understand the loss of value to existing enterprises that would result from the implementation of Garnaut’s recommendation. Attracting investment in existing generation assets would prove challenging, while attracting interest in any significant new generation assets would be close to impossible.*

The discussion paper's dismissal of a "sovereign risk" problem is surprising, because the paper identifies "investor confidence" as one of the desired observable outcomes from the implementation of the AETS.

The discussion paper could be interpreted as implying that any addition to the cost of capital caused by the AETS is no different from the ongoing *sovereign risk* businesses have to deal with from governments exercising their powers. For example, it is no different from the risk associated with taxation changes that are not typically compensated, or spending decisions. However, just because the cost impacts of some government policy changes go uncompensated, it does not follow that the cost impact of all policy change should go uncompensated, especially if that cost is large and concentrated. There should be more detailed examination of the possible effect of the AETS on risk premiums demanded by investors under different allocation scenarios, and how significant an impost the AETS will have on property rights.

### **3. Permit Allocation**

Getting the permit allocation correct will assist the credibility and management of the economic impacts of the scheme. The discussion paper acknowledges that: "*Who they are allocated to, however, will have large effects on the distribution of income.*" (p15). However, the paper also notes: "*An ETS is not intended incidentally to have large and arbitrary effects on the distribution of income*" (p53), which implies that adjustments should be made to address such effects. Proper consideration should be given to income effects due to losses borne by asset owners.

An initial auction of permits for the commencement of the scheme is highly desirable, as it will assist price discovery. However, efficient price discovery does not require 100% of permits to be auctioned.

#### **3.1 The Disproportionate Loss Principle**

Permit allocations should be based on the *disproportionate loss* principle. This principle requires that the initial permit allocation should, to the extent possible, be used to offset any disproportionate cost shares, while avoiding giving parties disproportionate windfall gains. The choice is not limited to either a 100 percent allocation of permits or none. This will not compromise static economic efficiency. Free permits are not a transfer of wealth to their recipients, but offset the transfer of wealth away from them.

This principle would achieve outcomes consistent with basic notions of fairness, and help extinguish additional sovereign risk. Some parties would remain worse off even after redistribution mechanisms, including some high emission generators. However, the principle captures the desirability of moderating extreme negative outcomes.

A strong energy market, characterised by high prices and robust demand, is likely to facilitate the passing on of permit costs, and may reduce or eliminate the need for compensation. This is an empirical question, for which modelling is required to help answer. If it can be demonstrated that impacts on any individual generators will not be disproportionate, then no permit allocations should be provided. But if estimated impacts are large, they will need to be addressed.

The *disproportionate loss* principle for permit allocation was advocated by the Prime Ministerial Task Group on Emissions Trading, and accepted in the Howard Government's response to the Task Group's recommendations. The report of State and Territory officers of the National Emissions Trading Taskforce also supported the principle. The Commonwealth Minister for Climate Change and Water has flagged that the AETS will be designed to address the competitive challenges faced by "strongly affected industries", which is consistent with the disproportionate loss principle.

Permit allocation is a transitional issue. While determining allocations could be quite complex, once undertaken, this has no consequences for the design of the ongoing scheme. It is therefore not inconsistent with the guiding principle of simplicity advocated in the discussion paper.

### **3.2 Process for Determining Permit Allocations**

The NSW Government agrees with the Garnaut Review that an independent authority should be established to issue permits. The process for doing so should be developed and agreed to by all Australian governments.

The *disproportionate loss* principle has to be made operational. If compensation is to be given in the form of free allocations, ideally, allocations would relate to the reduction in asset values associated with existing plant for a defined period, such as twenty years. The negative impact of the AETS on asset values is easier to determine than changes in profits. The approach should then be to put an acceptable floor under value losses for the commencement of the scheme, but not to provide any guarantees beyond this.

The magnitude for "disproportionate loss" could be defined relative to an estimate of an economy wide average loss. Consideration should also be given to basing allocations on transparent observable characteristics, such as historic emissions. However determined, upfront one-off free allocations would avoid inefficiencies that could arise if allocations were based on future behaviour.

Free permit allocations based on modelling projections could be subject to ex post adjustment if the assumed values for critical parameters including permit prices, pool prices, and/or sales volumes proved to be significantly inaccurate. This could adjust for unintended gains as well as shortfalls. The adjustment process would need to be clearly defined in advance.

If ex post adjustment is to be allowed for, for example to deal with rule changes, it should be based on a pre-determined process that is not subject to manipulation. There should be the possibility of adjustment in either direction – i.e. for both excessive losses or excessive gains, relative to the ex ante estimate. Ex post adjustment may also require modelling to establish a counter-factual.

## Box 5.

### Lessons from The European Union ETS

The first phase of the EU ETS has been heavily criticised because it appears that there was an over-allocation of permits to electricity generators, resulting in windfall gains for these participants and consumers bearing the brunt of prices increases.

There were clear inadequacies in the implementation of the EU scheme, permit allocation in particular. Given the ambitious nature of the EU ETS and the complex political issues involved amongst the participating jurisdictions, this is not surprising. It was the first large cap and trade scheme in the world and was under severe time pressures.

Free permit allocations to generators in phase I and II of the EU ETS were not explicitly provided for the purpose of compensation. More than one justification has been suggested for the allocations given, including compensation for stranded assets, ensuring industry acceptance of the scheme, management of the price risk associated with uncertainty regarding the size of the abatement task, assisting with price discovery, and the funding of technology transition.

Estimating the extent of cost pass-through has proven difficult, and likewise the level of windfall profits, in large part because of the difficulty of establishing the counterfactual. Nevertheless some studies have concluded that pass through was significant.

Lessons learnt from the EU ETS that are particularly applicable to Australia include:

- Allocation rules need to be transparent: in the EU, each country was responsible for developing its own allocation plan, resulting in varying approaches. In Australia, this should be undertaken by a single independent Scheme Regulator. There should be transparency in the process.
- Accurate emissions information is essential to determine the number of permits to issue. The EU did not have this for all of the covered jurisdictions. The Australian scheme will only commence once the required data is available. The National Greenhouse and Energy Reporting Act, 2007, is the first major step to setting up the arrangements and powers required to gather the information for a successful AETS.
- There is a need to encourage early price discovery. The EU scheme suffered from a lack of liquidity as most permits were allocated and held by participants. This made it difficult for those parties trading permits to assess their true scarcity, and assess the price they should pay for a permit. Allocation erred on the side of too many permits. As it became apparent that too many permits had been issued, there was an inevitable crash in their price. In Australia, trading will be aided by a number of features:
  - Accurate monitoring and reporting that will give market participants better information.
  - Allocating sufficient permits via an auction based sale process that provides for an equilibrium price to evolve.
  - Allocating some permits to large trade exposed energy intensive industries that will have to sell those permits into the market to realise their value.
  - Scope for retrospective adjustments in the event of free permit allocations leading to excessive increases in asset values.

## 4. AETS Design Parameters

The AETS parameters that will impact on the allocation of risks are:

- annual emissions caps;
- penalties (or safety valves) for excess emissions, and make good provisions;
- banking and borrowing provisions;
- the nature and durability of emissions rights;

- the transition process; and
- governance, including processes for scheme amendments.

Aggregate abatement costs will be driven by the emissions caps. The negative consequences of the caps being set too low are more immediate than being too high. The management of this risk goes to the choice between achieving emissions targets, and putting a floor under the downside economic risks from permit costs, which was considered briefly in section 2.2.

If penalties are excessive, and producers have insufficient permits, they may choose not to undertake the abatement creating activity. There should be no suggestion of criminality for breaches for this reason. For the electricity industry, any such withdrawal of capacity could have consequences for the reliability of supply.

The discussion paper identifies agriculture and forestry as two key sectors that, due to technical constraints, are unlikely to be fully covered by the ETS at the outset. The sections below comment on general ETS design considerations, with reference in particular to the characteristics of, and issues affecting, the agriculture and forestry sectors.

#### **4.1 Setting an emissions limit**

The NSW Government agrees with the discussion paper’s approach that we “not act in isolation - but set a - budget and - target - comparable in adjustment effort to those accepted by other developed countries.” For economic competitiveness and development reasons, it is important that Australia keeps in step with the world scene and not be “too far ahead” of our major trade and investment competitors – otherwise there will be “carbon leakage” and unnecessary costs to our economy.

The discussion paper indicates that the Review will provide advice to government on trajectories and interim targets that is informed by economic modelling and further analysis. Most of this modelling effort will be undertaken at the Australian regional and domestic sectoral (selected) levels by Commonwealth Treasury, the Review and institutions such as ABARE. It is also important to undertake more downscaled modelling for specific sectors. In this regard, the NSW Department of Primary Industries (DPI) has a number of economic models of various agricultural production systems that could be used to evaluate the impact of various targets and trajectories. This information would complement broader-scale modelling. NSW DPI would be happy to discuss the application of its models with the Review team.

Discussion is also occurring with other States on the application of models similar to NSW DPI’s to other farming systems. A coordinated approach to such modelling could assist the Reviews’ consideration.

#### **4.2 Sectoral Coverage**

##### 4.2.1 Waste

The Review suggests that emissions from the waste sector can be accurately measured or estimated at reasonable cost. However, NSW experience indicates that emissions from landfills, which make up most of the emissions from the sector, are difficult to measure.

The *Final Framework Report* of the National Emissions Trading Taskforce, in acknowledging these difficulties, recommended that further work be carried out on the potential to include waste facilities in ETS coverage during the detailed design phase of the scheme.

NSW recommends that the Review conduct further work to investigate the feasibility of covering waste in an ETS, or that the Commonwealth conduct further work in consultation with the States and Territories. If that investigation confirms that accurate measurement is not possible, NSW suggests that coverage be phased in at a later time to enable further work on measurement accuracy and metrics for the sector.

#### 4.2.2 Agriculture and Forestry

The Review's proposal that sectors should be covered if the costs of distortions in abatement allocation decisions associated with a sector's exclusion from the ETS would exceed the costs of measurement and verification is supported. It is noted that costs of inclusion may comprise other impositions such as search, bargaining and enforcement costs. While large operators may be able to accommodate such costs, smaller enterprises may not.

The costs of measurement and verification for agriculture and, to a lesser extent, forestry will be high. As observed in the Garnaut Review Issues Paper 1 "Climate Change: Land use – Agriculture and Forestry", certain characteristics common to both the agriculture and forestry sectors (particularly native forests) create difficulties in monitoring, measuring and verifying emissions. These characteristics include: small and diffuse sources and sinks (particularly in agriculture); high diversity of entities across a diverse range of locations, climates and, in the case of agriculture, a diverse range of industries; high variability of emissions; and high unit costs of measuring and monitoring emissions.

#### Forestry

Forestry is better positioned than agriculture to participate in an ETS. This is particularly the case with Kyoto-compliant plantations. The forestry sector has participated in an emissions trading market through the NSW Greenhouse Gas Reduction Scheme (GGAS) and has developed methods and systems which would allow it to participate in a national emissions market. Plantation forestry carbon accounting is well advanced.

Should the forestry sector be part of the ETS, coverage may be best delivered via a staged approach. Plantation forestry could be included first, and other plantations and forests included as accounting methods are developed to facilitate their inclusion, as follows:

- i) Kyoto-compliant plantations at scheme commencement;
- ii) Other plantations (non-Kyoto-compliant);
- iii) Managed forests.

Plantations represent only 1 per cent of Australia's forests and, as such, are well placed to serve as a pilot for the broader forestry sector. Within the native forestry sub-sector in particular, more research and development work is required. The Review may wish to consider the merit of determining a date for voluntary participation to give the native forestry sub-sector a target to work towards.

The following issues associated with coverage of the forestry sector need to be addressed:

- *Role of non-covered sub-sectors prior to coverage:* whether non-Kyoto-compliant plantations and managed forests could provide offset credits prior to being covered and whether they should participate in a stand-alone baseline and credit scheme prior to participation in the national ETS.
- *Transitional arrangements:* transitional arrangements from GGAS to the national ETS should not disadvantage GGAS offset providers.
- *Voluntary participation:* while coverage at a sector level is proposed, the merits of allowing ‘optional participation’ at the company or project level should be considered. Under this proposal, a company, project or defined piece of land, after a set eligibility date, would have the option of entering the scheme. Once participating, all emissions and sequestration after the set accreditation date would be accounted for annually and any net sequestration credited and tradeable. Credits and liabilities would be equivalent and fungible with other credits and permits under the ETS.
- *Liability:* under the New Zealand ETS, forestry will be covered from the commencement of the scheme to limit incentives for foresters to bring forward clearing to avoid liability under the scheme. Liability under the scheme will include deforestation of pre-1990 exotic forest and conversion of pre-1990 forest land to non-forestry use.

#### Agriculture

The costs of measurement and verification of agricultural emissions are not sufficiently well understood to include the agriculture sector in the ETS at this stage. The discussion paper suggests that agriculture be phased in, with the first stage to include an initial period of R&D, while participating in the ETS through the provision of offset credits. This first step appears reasonable, subject to resolution of measurement and verification issues.

The following issues associated with coverage of the agriculture sector need to be clarified:

- Whether there is any intent to cover particular agricultural industries from commencement of the ETS (i.e. equivalent to Kyoto-compliant plantations in forestry). Emissions measurement issues would probably preclude this. It is noted that inclusion of industries where emissions might be more easily measured could create a potential resource misallocation given enterprise substitution at the farm level. The efficiency aspects of ETS proposals that cover only a subset of agricultural industries would need to be carefully considered.
- Whether coverage under the ETS should be limited to particular types of activities. Under New Zealand’s ETS, coverage (not commencing until 2013) will be limited to synthetic fertiliser use, enteric fermentation and manure management. Minor sources of greenhouse gas emissions will be excluded.

#### **4.3 Point of obligation**

The agriculture sector is characterised by a diverse range of enterprises in terms of size, business type, and location.

Given the challenges in measuring and monitoring emissions, and the likelihood of high transaction costs, there is some debate about whether reporting obligations should be placed 'upstream' (e.g. suppliers of inputs such as fertiliser manufacturer/distributors) or 'downstream' (e.g. processors of outputs such as abattoirs or mills) of individual farms. While placing obligations upstream or downstream of farms would reduce transaction costs and overcome incentive problems associated with self-reporting of activities by individual farms (e.g. on livestock numbers or extent of crops), it would also reduce price signals to stimulate action to mitigate emissions by individual producers. The trade-off is between lower costs arising from simplicity and loss of efficiency due to indirect price signals.

There are a number of potential options for verification. An upstream (i.e. based on input costs for fuel, fertiliser, electricity, etc) or downstream (e.g. per kg of meat, wool, grain, milk, etc) levy could be imposed. This would be the cheapest and easiest as inputs and outputs are already measured and transactions notified (it would operate similar to the GST).

Another option is to assume a given level of emission or sequestration based on the adoption of agreed management practices (e.g. zero tillage for crops or rumen additives for livestock) or that certain breeds of livestock with superior genetics were used. This would require landholders to verify that a certain practice was adopted, rather than measure actual soil carbon or methane emissions in the field, a process similar to the verification system for organic farming and environmental management systems. The cost of operating environmental management systems or organic farming systems might provide an early estimate of likely costs. There would also need to be robust scientific information on the relationship between farming practices and the level of emission or sequestration – which would vary by livestock breed, by agro-ecological zone, by soil and enterprise type.

A third option (and the most expensive of those outlined) would be to directly measure emissions or sequestration in the field. This may be possible for carbon in soils, but there are no practical field-based measures for methane from livestock or nitrous oxide from soils. NSW DPI and others are working on simple tools – such as diode laser arrays, but these remain expensive and are not yet suitable for commercial applications.

The New Zealand Government is currently assessing where the primary points of obligation should be set. Its initial preference is for points of obligation to rest with dairy and meat processors and fertiliser companies, which are directly up or down stream of the farm enterprise.

The forestry sector is less problematic than the farm sector due to smaller numbers of participants and well established systems of emissions and sequestration monitoring. However, an area of difficulty is determining the point of creditation. For example, it is debatable as to whether carbon stored in harvested wood products should be credited to the grower or processor. At the point of obligation, the accounting should ideally reflect real carbon flows. In the case of harvested wood products, the point of creditation should be the forest growers to provide the incentive to optimise the carbon sequestration benefits of the forests they manage.

The structural differences between farming and forestry would justify differences in point of obligation treatment between the two sectors.

## 4.4 Domestic offsets

The discussion paper proposes that domestic offsets should be accepted without limits, but that they will have a small role, given broad coverage of the ETS. NSW DPI has raised the following concerns with respect to particular sectors.

### 4.4.1 Forestry

Specific issues that may be considered relating to forestry offset rules include:

- *Recognition of long term carbon storage in harvested wood products:* carbon storage in harvested wood products (HWP) is recognised in Australia’s national carbon accounts and within the Australian Standard for quantification, monitoring and reporting of greenhouse gases in forest projects, but it is yet to be recognised within an emissions trading context. In developing the forestry carbon accounting system for the AETS, crediting carbon stored long term in HWP could be considered.
- *Averaging of carbon stocks & banking:* within the NSW GGAS there is a robust and credible scheme for forest offsets. The amount of carbon sequestration that may be recognised is limited to the minimum that can be maintained over 100 years (the ‘100 year maintenance rule’). An alternative approach is to allow the averaging of carbon stocks over time.
- *Banking:* provision for banking of annual sequestration could be considered to provide flexibility to forest growers making long-term carbon maintenance commitments.
- *Additionality:* the participation of the forestry sector as an offset provider is dependent on it being able to meet the eligibility criterion of “additionality”. The concept of environmental additionality is essential to achieve real abatement outcomes. However, “financial additionality” may render commercial forestry ineligible. One simple option to address this requirement would be to recognise long-term maintenance requirements (currently 100 years in GGAS and 70 years in the Australian Greenhouse Office’s Greenhouse Friendly™ program).
- *Dates for eligibility and accreditation:* the careful selection of dates for eligibility and accreditation is vital to achieving equity amongst participants. To illustrate, since 2000, two international companies have invested \$40 million in (Kyoto compatible) reforestation projects in NSW. The opportunity to realise the carbon values from these investments would be eliminated if, for example, the eligibility date for these offsets was determined to be 1 July 2007 rather than 1990 as was proposed by the previous federal government. For Forests NSW, a shift in the current eligibility date from 1990 to 2000 would result in a 95% reduction to the forest offset pool it currently has registered under GGAS.

### 4.4.2 Agriculture

Most of the issues which will prevent agriculture being a covered sector from the commencement of the ETS will also mean that it will be difficult for agriculture to be included from the outset as an offset provider. That is, the costs of measurement and verification of emissions and abatement will be too high.

There is limited information on cost-effective abatement options in the agriculture sector. Emission reductions can be achieved through, for example, minimum cultivation, lower usage of nitrogen fertilisers and improved cattle feed quality, and revegetation/production of biomass. An offset option is increasing soil carbon through reduced cultivation or promoting perennial pastures.

Many of the costs associated with these options are known, and will be incorporated into DPI's economic modelling outlined previously.

#### 4.4.3 Mining

Fugitive emissions from black coal mining, oil and gas production, processing and transportation account for a significant amount of greenhouse gas emissions. NSW contributes about 58 percent of national fugitive methane emissions.

The coal industry makes significant efforts to capture and utilise methane from coal mining. If fugitive emissions from mining are excluded from ETS coverage, the national ETS should consider the capture of fugitive methane emissions as an offset. Fugitive emissions from abandoned coal mines will be more difficult to regulate but, again, capture should be eligible for offsets accreditation.

### **4.5 Inter-temporality**

NSW recommends that proposals to enable the borrowing of permits should proceed with caution and any arrangements to allow borrowing should be accompanied with adequate safeguards to protect against the environmental and financial risk of liable parties of defaulting on their obligations to pay back borrowed permits.

In the case of coal mining, large volumes of GHG may be emitted during the course of mining that are not anticipated. Limited borrowing or lending of permits under special circumstances may provide a practical means of addressing concerns of mining companies that, due to the unpredictability of these events, may have insufficient permits to cover their emissions obligations. In this case having an option to borrow permits would help companies avoid unintentional breaches of their obligations. Under this arrangement permits would be used at the time when they are expected to have the greatest value, thereby minimising the overall cost of mitigation.

### **4.6 International linkages**

The NSW Government strongly supports the view put forward in the discussion paper about the importance of the AETS developing international linkages. The AETS will not be effective in reducing abatement at least cost without international linkages. Subject to governance considerations including clarity of property rights and environmental integrity, it is desirable to be able to take opportunities to facilitate low cost abatement options overseas ahead of higher cost domestic abatement as much as possible. This has the potential additional benefit of providing economic development support.

NSW DPI has noted that international emissions trading linkages may be expected to provide a strong incentive for large-scale uptake of forest offsets. In particular, Australian investors would be likely to invest with more confidence if they knew that international marketing of

their product was an option. At present, over 80 percent of global emissions trading occurs through the European Union's ETS, but the European Commission does not support the recognition of land-use related emissions units in trading. Given that LULUCF activities are a significant potential offset source for Australia, Australia should seek to design its domestic scheme to ultimately incorporate LULUCF activities. As the discussion paper notes, this would strengthen the case for regional integration with countries where LULUCF and agriculture are important (such as New Zealand, PNG and other South-East Asian countries) and make a case for full inclusion of these sectors in other countries' regimes.

From a primary industries perspective, there are advantages in linking with the New Zealand ETS (NZETS), as it has given priority attention to both forestry and agriculture. In particular, the NZETS' rules for forestry have many design attributes which are compatible with the approach preferred by the Australian forest industry. A linkage to the NZETS could in theory occur at the time of commencement of the AETS.

International linkages are also important for international investors with forest offset investments based within Australia. In this case, the carbon credits may be transferred to meet the investor's emission reduction obligations within their home country. Since 2000, over \$40 million has been invested by international investors in 'Kyoto compatible' planted forests with Forests NSW. The absence of an approved mechanism to realise the carbon values from these investments is currently inhibiting further new investment.

For international forest offset investors, the Joint Implementation (JI) mechanism under the Kyoto Protocol represents a critical mechanism for realising the carbon values from their Australian projects.

#### **4.7 Possible Uses for Permit Proceeds**

The NSW Government strongly supports the position taken in the discussion paper that transitional financial assistance (possibly in the form of free permits) should be provided to account for distortions arising from major trading competitors not adopting emissions limits (or pricing). 'New' TEEII plants should also be eligible to receive appropriate assistance, consistent with the rationale that overseas competitors are not subject to equivalent constraints on emissions. However, the means of setting intensity baselines for the purposes of determining assistance for new plant is likely to be different to existing plant.

Some of the proceeds from permit auctions should be used to compensate households least able to absorb the price increases associated with the AETS, and to help regional adjustment.

The NSW Government supports the Discussion Paper's recognition of investment in public transport systems and assistance with research, development and deployment of low emission technologies as amongst the priorities for use of auction revenue.

An example of low emissions technology that could be prioritised for funding is Carbon Capture and Storage (CCS). CCS technology is at various stages of development in Australia and overseas, but deployment may still be some years away. Research and development in CCS, including the construction of pilot plants, requires substantial capital outlays with no guarantee of a return. In view of the Australian economy's current dependence on coal, the fast-tracking of CCS R&D could assist during Australia's transition to a low carbon economy.

#### **4.8 Trade-exposed industries in the agricultural and forestry sectors**

The Australian agriculture sector is significantly “trade exposed”, with about two thirds of agricultural output destined for overseas markets. Some commodities are more trade exposed than others. Amongst the more traded commodities are wheat, cotton and beef. On the minerals side, coal is particularly trade exposed, with over 70 percent of NSW coal produced exported.

Agriculture is the second largest contributor to greenhouse gas emissions, accounting for almost 17 percent of total Australian emissions. With respect to forestry, the pulp and paper industry is highly emissions-intensive and faces competition in domestic markets from producers in Asia, predominantly from China, Indonesia and Korea.

As noted in the discussion paper, a material misallocation of resources could arise if Australian trade-exposed industries are subject to constraints that are not imposed on their major trade competitors. It is important to also be aware of inefficient allocation consequences that could arise in the domestic market due to the provision of compensation to some sectors and not others. For example, steel and wood products compete in the same domestic market for building products. If steel was declared a TEEII but wood products were not, steel could enjoy an unfair competitive advantage in the building products market. Perverse environmental outcomes could also arise, with emission intensive products such as steel gaining market share from wood products. Details of the administration of financial assistance measures need to be explored.

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