Issues Paper 1
Climate Change: Land use - Agriculture and Forestry

This paper includes a summary of climate change issues relating to the agriculture and forestry sectors raised at the Garnaut Review Public Forum on August 17 2007. It does not represent a position held by Professor Garnaut or the Review Secretariat, but seeks to raise relevant questions and invite feedback from interested members of the community.

1 Introduction

1.1 The Garnaut Climate Change Review

The Garnaut Climate Change Review (hereafter 'the Review') was commissioned by Australia's State and Territory Governments on 30 April 2007, with an invitation extended to the Commonwealth Government to join the Review. The Leader of the Federal Opposition has announced that he would bring the Commonwealth Government into the Review if he were to become Prime Minister.

The Review will examine the impacts of climate change on the Australian economy, and recommend medium to long-term policies and policy frameworks to improve prospects for sustainable prosperity.

In carrying out this task, the Review will undertake an extensive consultation process to encourage open and informed debates on key climate change issues.

On 17 August 2007, the first of a series of public forums was held. This forum sought to explore some of the ways in which land management, agriculture and forestry interact with climate change in Australia, and how that interaction might be affected by policy choices in Australia.

The Review recognises the importance of agriculture and forestry in the Australian context of climate change, and the need for appropriate incentives for agriculture and forestry in participating in the mitigation effort.

1.2 Purpose of this issues paper

The purpose of this paper is to raise, explore and seek input on four key issues facing Australian agriculture and forestry as a result of climate change, and their participation in the efforts to reduce greenhouse gas emissions:

- adaptation in the agriculture and forestry sectors;
- the mitigation options for agriculture and forestry;
- the practical considerations in relation to the inclusion of agriculture and forestry in an emissions trading scheme; and
- the recognition of carbon sinks and offsets.

1.3 Submissions process

All submissions in response to this Issues Paper should be received by Friday 4 January, either via email at contactus@garnautreview.org.au or sent to:

Garnaut Review Secretariat

Level 2, 1 Treasury Place

East Melbourne, Victoria 3002

Submissions will be made available on the Review website unless specifically requested to be confidential. If you have any queries, please contact the Secretariat via email at contactus@garnautreview.org.au or on (03) 9651 0631.

2 Context: Climate change and the agriculture and forestry sectors

Agriculture and forestry are vital sectors of the Australian economy. Disruption of these sectors due to climate change would have implications for employment, trade and land management (Allen Consulting Group, 2005). In 2004-05, agriculture employed approximately 360, 000 people nationally. In recent years, agriculture has contributed on average 3 % of GDP, while forestry has accounted for about 1 % of GDP.

Agriculture and forestry will be affected by climate change and climate change policy in a variety of ways. The extent of climate change impacts will be influenced by:

- changes in climate variables such as temperature and rainfall;
- the affect of climate change on the agricultural productivity in our major competitors;
- the extent of global participation in mitigation efforts through domestic and international policies; and
- a range of complex interactions with other environmental, social and economic factors.

Climate change is likely to result in changes to long term climate trends and an increase in the variability of an already variable climate. The potential impacts of these climate changes on the agriculture and forestry sectors include increased fire danger, damage to crops and soils due to flooding, land degradation, crop failure and livestock heat stress and even death. The potential productivity losses in the agriculture and forestry sectors as a result of climate change are likely to lead to a fall in gross regional product, and farm incomes in some regions. Experience in rural communities during drought periods has shown that loss of income can lead to a range of impacts including increased workload, family conflict and withdrawal from social groups and communities. Farms in favoured areas will be in a good position to take advantage of higher output prices.

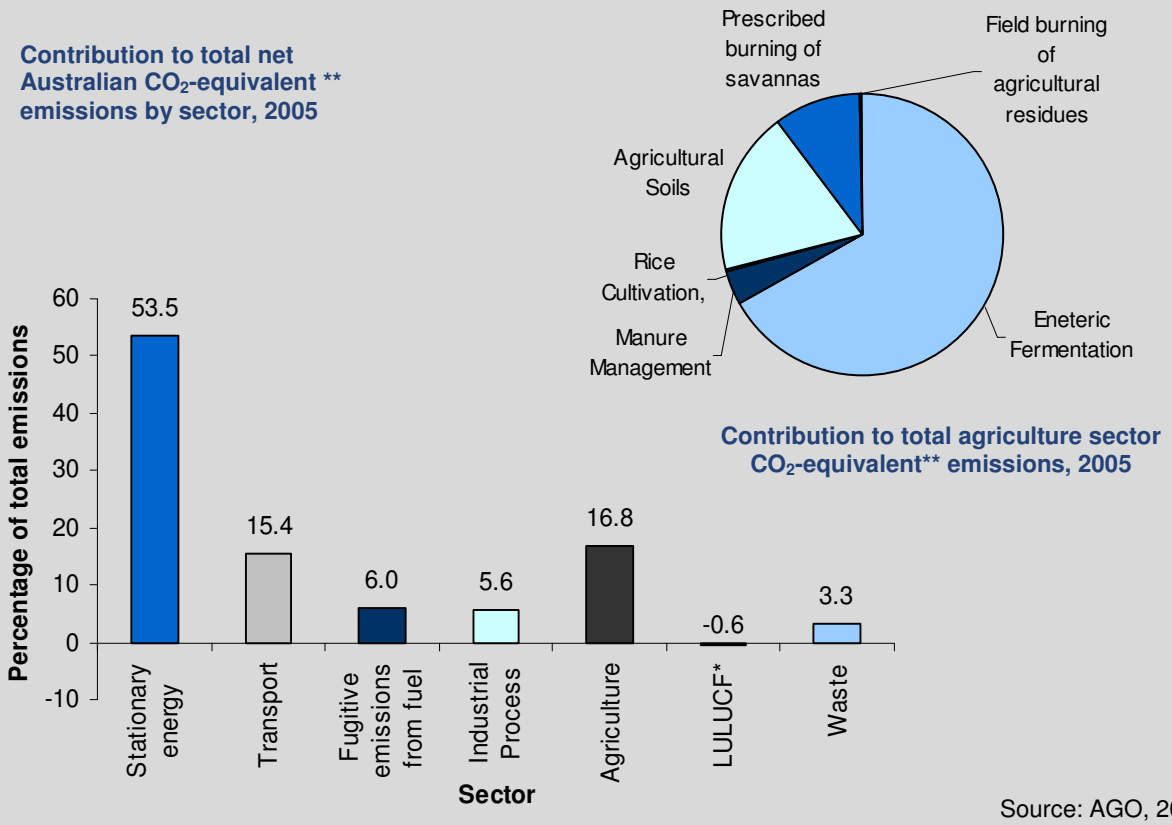
As a significant contributor of greenhouse gas emissions, it is desirable for agriculture to play a part in the mitigation effort. Agriculture contributed 16.8 % of Australia's greenhouse gas emissions in 2005, making it the second largest emitting sector behind stationary energy (see Box 2.1). This contribution rises to 23 % when the energy and transport used by the agricultural sector is included (Hatfield-Dodds *et al.*, 2007).

The extent of mitigation efforts internationally will influence the extent of impacts on Australian agriculture and forestry. Australian and New Zealand farmers, with their greater reliance on grass feeding and all-year round outdoor husbandry, would gain considerably in competition with emissions intensive agriculture in Europe, North America, Japan and Korea if there were a comprehensive global carbon pricing regime. Mitigation efforts, such as the use of farmland for bio-energy are likely to result in an increase in global prices, notably for grains and oilseeds, and livestock products using them as inputs.

Finally, the land use, land use change and forestry (LULUCF) sector has the potential to be a net sink of greenhouse gases as it was in 2005. Reductions in land clearing and the planting of new forests are largely responsible for Australia being 'broadly on track' to meet its Kyoto target of 108 % on 1990 levels by 2012 (PMTG, 2007). Between 1990 and 2005, emissions from agriculture, forestry and fishing declined by 41.7%, largely as a result of reduced forest clearing. Against this decline, direct emissions have increased in all other sectors, particularly in the electricity, gas and water sector and mining, which increased by 46.9% and 44.8% respectively (AGO, 2007b). In addition, modified farm management practices (e.g. reduced tillage) can lead to agricultural land being an important carbon sink.

The extent of economic and social impacts of climate change on the agriculture and forestry sectors will be dependent on the biophysical impacts resulting from climate change, the design of policy mechanisms to encourage adaptation and mitigation, and the effective management of the opportunities presented by climate change.

Box 2.1 Greenhouse gas emissions from the agriculture and forestry sectors



Source: AGO, 2007

The main greenhouse gases emitted from agriculture in Australia are methane and nitrous oxide. In 2005, agriculture accounted for:

- 60% of Australia's methane emissions, with over 70% of these coming from livestock through enteric fermentation and manure management; and
- 85% of Australia's nitrous oxide emissions, with major sources being release as a result of nitrogen fertiliser application and nitrogen in animal excreta (AGO, 2007).

* LULUCF: Land use, land use change and forestry

** CO_2-equivalent; this measure is used to represent emissions of all greenhouse gases listed under the Kyoto Protocol in terms of the contribution they make to global warming relative to carbon dioxide.

3 The issues

3.1 Adaptation in the agriculture and forestry sectors

Opportunities for adaptation

Adaptation is "adjustment in natural or human systems in response to actual or expected climatic changes or their effects, which moderates harm or exploits beneficial opportunities" (Pittock, 2003).

There are a range of adaptation options available to agriculture and forestry, many of which are extensions or enhancements of current measures aimed at managing variability in the existing climate (see Box 3.1).

Research has shown that the uptake of adaptation measures can considerably reduce the projected economic impacts of climate change (Gunasekera *et al*, 2007). However, these are not costless. Most involve an initial investment while the benefits may be realised over a longer period of time.

Box 3.1. Adaptation opportunities available to agriculture and forestry

Some examples of adaptation opportunities available to the agriculture and forestry sectors include:

- The use of different breeds;
- Changes in management practices such as the time and pattern of planting, watering and the application of fertiliser;
- Changed harvesting patterns, rotation periods, improved fire management through landscape change and prescribed burning;
- Improved moisture management by increased on-farm capture and storage, residue management, weed control and increased water efficiency through variety choice;
- Use of seasonal climate forecasting to aid decision making;
- Use of financial management tools to manage risk;
- Changes in land use to an industry more appropriate to changed local climate conditions.

Adaptation challenges

Successful adaptation to climate change will require an active, strategic approach operating at all levels of society. Research and development needs to be undertaken in a participatory way with stakeholders, recognising their key concerns and drawing on their expertise (Howden *et al*, 2007). Despite the potential benefits of adaptation, there is often a lack of uptake and adoption of measures on farm. Factors which have been identified as affecting the uptake of adaptation opportunities in the agriculture and forestry sectors include:

- The need for funding and support for research and development into alternative technologies, improved climate data and monitoring;
- The need for cost-benefit analyses of adaptation options;
- The need for institutional, financial and policy environments that support adaptation and manage the transition to new systems;
- Availability of information relating to climate change impacts and the benefits of adaptation;
- The need for potentially large upfront investment;
- The need for support for community leaders in adaptation and change; and
- The difficulty for relatively small enterprises to deal with uncertainty and manage risk.

Government has been identified as having a key role in addressing some of the above factors, and also in the development and maintenance of key public infrastructure vulnerable to climate change

Questions for consideration

How might these adaptation challenges be addressed?

What other factors affect the implementation of adaptation measures in the agriculture and forestry sectors?

How should responsibilities be shared in dealing with adaptation?

3.2 Mitigation options for agriculture and forestry

Mitigation is a reduction in net greenhouse gas emissions.

The mitigation challenge

The agriculture sector is a significant emitter of greenhouse gases. It is important that ways be found to encourage a reduction in the greenhouse gas emissions intensity of agricultural production in order to help meet the cuts in global emissions required to reach stabilisation of greenhouse gases in the atmosphere at a level that avoids the worst impacts of climate change.

In addition to contributing to reductions in direct emissions, the agriculture and forestry sectors can play a significant part in meeting overall emissions reduction targets in both the short and long term due to the fact that both sectors can provide significant capacity as carbon sinks.

However, these sectors have some unique characteristics, summarised below, which make mitigation difficult:

- **Diffuse sources and sinks:** While significant at the national scale, agriculture and forestry emissions sources and sinks are often small, diffuse and difficult to measure and verify at the individual entity level. Sources and sinks are frequently small relative to the measurement effort required.

- **High diversity of entities**: There are more than 130 000 individual commercial farms in Australia across a diverse range of locations, climates and agricultural industries. Each agriculture and forestry sub-sector, as well as individual entities within them, has its own unique production system and management approach.
- **High variability of emissions:** The majority of greenhouse gas emissions from these sectors are the result of biological processes that are inherently variable and highly dependent on factors outside human influence, such as variations in climate and weather.
- **Trade exposed industries:** On average around two thirds of total agricultural production in Australia is exported (DFAT, 2007), often competing against highly subsidised producers and leaving the sector exposed to international competition. Mitigation measures that lead to an increase in costs could reduce exports or lead to increased competition from imports, unless equivalent measures are applied to major trade competitors, which vary within and between the agricultural and forestry industries. For the dairy industry, the key competitors are New Zealand and Europe, which supply more than 60% of the world's dairy trade (Dairy Australia, 2007). These nations are committed to emissions reductions under the Kyoto Protocol, although the manifold government assistance to European farming obscures the effects of ETS on farm competitiveness. For the beef industry, the key competitors include Brazil, New Zealand, Uruguay and Argentina - largely countries not committed to emissions reductions and less likely to implement equivalent emissions constraints.
- **Highly elastic consumer markets:** Farms are price takers in the global supply chain, and have limited opportunity to pass the potential costs of mitigation policies or the increased costs of energy and energy-intensive inputs on to consumers of internationally tradeable products.
- **Liability:** The permanency of sinks and liability for maintenance at an individual entity level is difficult to guarantee given the complexity of natural systems and the timescales involved.

Despite these challenges, there is a wide range of mitigation opportunities and the agriculture and forestry sectors can contribute significantly to meeting national mitigation targets. These include improving animal genetics, dietary manipulation, improved stock and manure management, decreased use of nitrogen fertilisers, use of nitrogen inhibitors, and no-till farming and other management regimes to maintain carbon in the soil. However, a number of basic and applied research gaps still exist before the agricultural industries can be provided with comprehensive, scientifically sound, practical and commercially viable options for the mitigation of methane and nitrous oxide.

A significant challenge for both governments and industries is to develop policies and approaches that promote the uptake and adoption of mitigation measures on-farm. Even win-win agricultural mitigation practices will often require an initial upfront investment which may discourage uptake in the absence of any direct financial incentives, government regulations or industry-wide standards.

Questions for consideration

What potential is there for mitigation in the agriculture sector in the short term? What practical options for mitigation are likely to become commercially viable in the near future?

What incentives, policy innovations and/or market-based mechanisms would guarantee an optimal contribution to the national mitigation effort?

What is the best way to deal with trade exposure if policy measures are implemented to reduce emissions from the agriculture and forestry sectors?

Mitigation policy options

To date, a range of market and non-market measures have been identified to encourage mitigation in the agriculture and forestry sectors, including directly liability or involvement in a national emissions trading scheme.

It is likely that the Review will support Australia implementing an emissions trading scheme (ETS) as part of a suite of policy measures. It is generally accepted that pursuing comprehensive emissions coverage under an ETS maximises the opportunities for achieving mitigation at least cost to the overall economy. However, limited work has been undertaken to date investigating the inclusion of agriculture and forestry in an economy-wide ETS. Even if the agriculture and forestry sectors are excluded from an ETS, they likely to be impacted through increases in the cost of fuel, energy and energy intensive inputs such as fertilisers, chemicals and feedstock.

The implementation of mitigation measures will impose a cost on the economy - the choice of policy instrument will have an influence on the distribution of this cost. This paper is looking particularly at the issues related to the inclusion of agriculture and forestry in an ETS, but recognises that due to the potential practical difficulties it may not be the most appropriate mechanism.

Regardless of the extent of coverage in an ETS, policy measures to complement an ETS may be required to address those market failures not corrected by an ETS and encourage mitigation in non-covered sectors and sub-sectors. Therefore, the final policy mix may involve a range of mechanisms.

Questions for consideration

Accepting existing practical limitations, is direct inclusion in an ETS the most appropriate mechanism for encouraging mitigation in the agriculture and forestry sectors?

What policy mechanisms would be more appropriate for these sectors? How would these measures interact with an ETS covering other emitting sectors?

What would be the economic impacts on the agriculture and forestry sectors of a domestic ETS covering stationary energy and transport?

Providing opportunities

Mitigation policies such as emissions trading have the potential to provide opportunities for the agriculture and forestry sectors which could contribute to offsetting the increased costs of energy and other key inputs. These may include:

- the hosting of renewable fuel generators such as wind turbines;
- the production and supply of biomass for electricity generation or biofuel production; and
- the creation of tradable offsets through emissions reduction or carbon sinks.

Questions for consideration

What are the opportunities available to the agriculture and forestry sectors as a result of mitigation policies?

How should uptake of these opportunities be maximised?

Do these opportunities create perverse outcomes and, if so, how should these be managed?

3.3 Practical considerations for including agriculture and forestry in an emissions trading scheme

There are a number of potential practical difficulties to the inclusion of agriculture and forestry in an emissions trading scheme. A summary of the potential advantages and practical difficulties of including forestry and agriculture in an emissions trading scheme is provided in Table 1. Some key design elements are discussed further below.

Table 1 Summary of the potential advantages and practical difficulties for the inclusion of agriculture and forestry in an emissions trading scheme

Potential advantages	Practical difficulties
Efficiency Inclusion of all sectors in a domestic ETS would enable the pursuit of greenhouse gas reductions at a lower overall cost. **Difficulty in applying traditional regulation techniques** The cost and value of mitigation options varies considerably between individual entities, and is therefore difficult to apply traditional regulatory measures. **Mitigation incentives** Market-based mechanisms provide incentives and flexibility for mitigation. **Increasing competition for land** A market mechanism could resolve the competition for land between forests, biofuels and food production. **Opportunities for landowners** Landowners could gain from participating in an ETS if it provides further opportunities for land management and access to the international carbon market. **Economies of scale** The cost and complexity of determining emissions reductions from individual projects as required by existing voluntary offsets schemes may discourage involvement. The devlopment of verification and measurement rules as part of inclusion in an ETS could therefore increase overall mitigation.	**Knowledge gaps regarding mitigation capacity and cost** The costs of mitigation in agriculture are relatively unknown in an Australian context. If mitigation options are limited and costly, inclusion of agriculture and forestry in an ETS could increase the cost of mitigation for other sectors included in the scheme. **Capacity to administer** The ability of small individual landowners to meet requirements and actively participate in an ETS could be limited and/or administratively burdensome. **International consistency** Land-use, land-use change and forestry emissions and their accounting have been widely debated during the Kyoto process. Rules inconsistent with international processes could confuse the market and limit international trading. **Liability for landowners** If agriculture and forestry are included in an ETS, landowners will then become liable for emissions and ensuring the permanency of carbon sinks. **Sectoral diversity** The agriculture and forestry sectors cover a diverse range of production systems, entity size and location. Different groups will be impacted differently, which may add complexity to the design of an ETS.

Point of obligation

Determining the extent of coverage and the point of obligation in an ETS can have a significant impact on the cost and efficiency of the scheme. Due to the difficulties associated with monitoring at the farm level, the cost to an individual of trading a small number of permits may be higher than the benefit – it is unlikely that individual landowners would find it economic to trade. Having hundreds of small participants may also affect the overall efficiency of the market (DEFRA, 2006).

Potential design options include:

- Involve groups of farmers, trade bodies or downstream wholesalers such as abattoirs or manufacturers;
- Establish brokerage bodies that specialise in the purchase of permits from small operators – such as the 'Offset Aggregators' under the CCX (see Box 3.2); and
- Make initial participation in the scheme (including liability for emissions) voluntary, encouraging involvement only from those that would benefit, or are willing to take the risk. This approach has been proposed by the New Zealand Government for land managers wishing to get credit for post-1989 afforestation (Appendix A).

Box 3.2. Chicago Climate Exchange (CCX) - Offset Aggregators

The Chicago Climate Exchange (CCX) is a greenhouse gas emissions allowance trading system where members make a voluntary but legally binding commitment to reduce emissions.

An Offset Aggregator is a CCX-registered entity that serves as an administrative and trading representative on behalf of multiple project owners, which aids smaller projects which may not generate enough offsets to overcome administrative costs.

Aggregators are responsible for interacting with the CCX and approved verifiers and explaining CCX rules and requirements to project owners. The Aggregator is also responsible for trading activities and the maintenance of the registry account (CCX, 2007).

Questions for consideration

Do the economic efficiency gains from including small emitters in an ETS justify the costs of compliance?

How could transaction costs be minimised?

What should be the point of obligation for agriculture and forestry industries in an ETS?

Should a threshold for liability be applied, and how should it be defined?

Monitoring and verification of emissions and mitigation

As mentioned above, the costs of accurately monitoring and verifying emissions at entity level is likely to be high relative to the level of emissions. This increases transaction costs which reduces trade, and in turn reduces efficiency.

To reduce the costs of monitoring and verification, proxies can be developed that use readily observable and measurable inputs/outputs to the process that can be correlated with the level of emissions. Examples include the number of cattle on a farm or the amount of fertiliser applied.

However, these indirect approaches may lead to errors in emissions calculations if the relationship between the proxy and emissions is uncertain; do not take into account the high level of variation that can occur within the chosen proxy – particularly where natural systems are involved; and may not provide incentives for the adoption of technology and/or practices that change the relationship between the proxies and emissions. This would reduce incentives for the adoption of new technologies or practices.

Potential design options include:

- Developing simple, standardised rules for issuing credits for agricultural and forestry emissions, such as those developed by the Chicago Climate Exchange (see Box 3.3).
- Use an on-farm accounting model such as 'OVERSEER' (developed by the New Zealand Government) or 'FullCAM' (developed by the Australian Greenhouse Office). However, research has suggested that models such as these can be complex, technically demanding, time consuming and do not produce results accurate enough for trading purposes (Allen Consulting Group, 2006).
- Define a benchmark based on regional and sectoral 'best-practice' emissions intensity levels, which would be revised and updated as technology improved (Kerr, 2007).
- For forestry, use a mixture of satellite imagery and self-reporting to initially quantify the area of planting or clearing. Planted areas could then be monitored to determine age/species and multiplied by a standard carbon stock value.

Box 3.3 Chicago Climate Exchange (CCX) Offsets

The CCX has developed simple, standardised rules for issuing carbon credits to the agriculture sector to encourage methane capture and combustion, no-till farming, grass and tree planting and improved rangeland management (CCX, 2007).

Emissions monitoring – no till farming

No-till farming reduces energy use by tractors and can improve levels of soil organic matter and hence sequestration of carbon in the soil.

Under the CCX system, no soil testing is required – only certification that the required practises have been implemented. Farmers are credited with 0.4 MT of carbon for each 0.4 hectares of eligible no-till cropping, which involves a minimum five year contractual arrangement. At present there is very little financial benefit due to the low carbon price in the CCX.

Questions for consideration

What 'proxies' would be appropriate for the estimation of emissions in the agriculture and forestry sub-sectors?

What systems are available that would allow for efficient and accurate monitoring of emissions at the operator level?

What are the implications if the stringency of monitoring, reporting and verification requirements vary between sectors and sub-sectors?

Sub-sectoral coverage

There is considerable variation in mitigation potential, practical measurement issues and trade exposure within the agriculture and forestry sectors. In some cases, a different approach may be necessary between sub-sectors. Examples include covering only synthetic fertiliser use, enteric fermentation and manure management within the agriculture sector as proposed in New Zealand's ETS.

Differential treatment has the potential to introduce economic distortions between related activities in the sector, such as intensive and extensive livestock production (PMTG, 2007).

For example, almost all of the methane released from manure management (which represents around 3% of total methane emissions) come from ponded or composted manures from pigs, poultry and dairy cattle, rather than the 'free range' manure that characterises the extensive livestock industries (AGO, 2001). However, these extensive and intensive industries may compete for the same markets. Due to their higher emission levels, intensive industries would face a higher carbon liability under an ETS, but may also have better access to affordable mitigation technologies.

Questions for consideration

Should all agriculture and forestry sub-sectors be included in an ETS? What sub-sectors might be better suited for inclusion?

How should economic distortions within the sectors be dealt with?

Phasing and timing

The potential advantages and difficulties described in Table 1 suggest that it may be difficult to include agriculture and forestry as full participants in a cap and trade ETS in the first phase of implementation.

An option could be a transitional approach in order to allow testing of a range of implementation solutions without impacting on the main ETS. This could involve the following stages (LWA, 2007, DEFRA, 2006, Keogh, 2007):

- Stage 1: Initial period of research and development, while participating in an ETS through the provision of offset credits. The high transaction costs of one-off accreditation for offset creation could disadvantage smaller entities.
- Stage 2: Development of a stand-alone, baseline-credit scheme, possibly with voluntary involvement to encourage adoption of best management practices. A stand-alone scheme would not necessarily require the same level of emissions accuracy as the main ETS.
- Stage 3: Full participation of agriculture and forestry in a cap-and-trade ETS, where the sectors will become liable for emissions as well as providing credits to the scheme, supported by research and experience gained in the earlier phases, and subject to comparable treatment by competitors in major markets for internationally tradeable farm products.

Questions for consideration

If a domestic ETS excludes agriculture and forestry initially, but includes them at a later point in time:

- What are the advantages/disadvantages of involving these sectors in the scheme through the inclusion of offsets, or an 'opting in' baseline and credit trading scheme?
- What sort of transitional arrangements should be incorporated in the initial design?

3.4 Recognition of carbon sinks and offsets

The agriculture and forestry industries have considerable potential to provide carbon sinks through changes in land management practices. The development of an appropriate framework to provide incentives for these activities will encourage greater overall mitigation and provide these sectors with new opportunities and an alternative source of revenue.

Prior mitigation action

There has been a considerable decline in emissions due to avoided deforestation in Australia between 1990 and 2005, in part due to the bans on clearing that have been imposed by State governments. These bans have resulted in the inability to commercially utilise that land. There is debate over whether past actions of this type should be eligible for credits under an ETS, if future avoided deforestation and afforestation are to be recognised.

The design of the ETS will need to consider how to avoid disadvantaging landowners or farmers in agriculture and forestry sub-sectors who choose to take positive action to reduce emissions, and also aim to limit perverse incentives to increase emissions prior to inclusion in an ETS.

Offsets and international frameworks

The international offsets protocols are outlined by the Clean Development Mechanism (CDM) and Joint Implementation (JI) process under the Kyoto Protocol. These mechanisms are intended to help developed countries in meeting their obligations, and provide opportunities for developing countries to contribute to greenhouse gas mitigation and achieve sustainable development.

There are a number of reasons why an offsets regime in Australia would benefit from being as consistent as possible with the JI mechanism, including: international credibility; smoother transition in the case of ratification of the Kyoto Protocol; reduced transaction costs; and international consistency (NETT, 2006).

The Prime Ministerial Task Group on Emissions Trading sees shortcomings in the international approach, and has identified the recognition of avoided deforestation and the development of rigorous methodologies for plantation offsets which take into account harvested wood products as key areas for development (PMTG, 2007). Other key areas within the agriculture and forestry sectors where there has been interest in developing methodologies for the financial recognition of mitigation are on-farm soil carbon management (such as no-till practices) and savanna fire management.

A difficulty in the development of any offset project is the transaction costs in baseline setting, accreditation, monitoring, measurement and reporting, ensuring additionality, and preventing 'double counting' with actions covered by the scheme (NETT, 2006).

Questions for consideration

What types of carbon sink and mitigation measures should be included as offsets or within an ETS? Are there practical and cost effective monitoring solutions available for these measures?

How should positive incentives to reduce emissions or perverse incentives to increase emissions prior to inclusion in an ETS be managed?

Should offset regimes recognised under an Australian ETS be limited to those that satisfy international carbon accounting protocols?

All submissions in response to this Issues Paper should be received by Friday 4 January either via email to contactus@garnautreview.org.au or sent to:

Garnaut Review Secretariat

Level 2, 1 Treasury Place

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Appendix A: New Zealand Emissions Trading Scheme – Forestry and Agriculture

The New Zealand Government has agreed in-principle to the introduction of a domestic, economy-wide ETS, announced in September 2007. Phased introduction will start from 1 January 2008 with forestry, followed by transport (2009), stationary energy and non-energy industry (2010) and agriculture and waste sectors (2013). The methodologies for the coverage of the agriculture and forestry sectors are described briefly below.

Agriculture

- New Zealand has an unusual emissions profile for a developed country, in that nearly 49% of greenhouse gas emissions arise from agriculture.
- Recognising the operational challenges faced, entry into the scheme is currently set at 1 January 2013.
- The activities covered under the ETS will be synthetic fertiliser use (N_2O) and enteric fermentation and manure management (CH_4 and N_2O), with minor sources excluded (*de minimus* principle).
- The point of obligation has not yet been confirmed, but the preferred approach is to cover importers/producers of fertiliser, and dairy/meat processors.
- Free allocation would be provided to the sector at 90% of the 2005 levels of emissions, with a range of allocation methodologies still under discussion.
- The New Zealand Government recognises that devising the right solutions to the challenges of including agriculture will take some time, however government expects the sector to start taking steps towards reducing emissions prior to 2013, and it will require the sector to monitor and report its emissions before the commencement of the scheme.

Forestry

- Forestry will be covered early (2008) to limit incentives for foresters to bring forward clearing to avoid liability under the scheme.
- Forestry coverage will relate to CO_2 only. Different rules and methodologies will apply to pre-1990 and post-1989 forests, based on the distinction made in the Kyoto Protocol.
- Deforestation of pre-1990 exotic forest will be liable under the scheme, with exemptions (by application) for smaller holdings and clearance levels, and verified weed control. Forest owners will be liable for emissions from the conversion of pre-1990 forest land to a non-forestry use. This does not include forest harvesting, provided the harvested land is replanted or allowed to regenerate into forest.
- Forest owners who established forests post-1989 on eligible land, or intend to establish new forests on eligible land, can apply to be included in the ETS. However, once they are included they are then liable for any change in carbon stock, including loss through fire, storm or harvesting.
- The point of obligation will be the land owner, or lessee given written approval from the landowner.
- Free allocations will be made available to forest owners, provided pro-rata on the basis of land area.
- The New Zealand Government is still in the process of developing methodologies for assessing the amount of carbon stored in a forest, and the changes in carbon stocks over time, for the purposes of allocating units and liabilities.

Further details on the New Zealand ETS can be found at http://www.climatechange.govt.nz and http://www.maf.govt.nz/climatechange/background-reports-and-analysis/forestry-in-nz-emissions-trading-scheme/ and http://www.maf.govt.nz/climatechange/agriculture-ets-q-and-a-final.htm

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