

Submissions report

An overview of public submissions
to the Garnaut Climate Change Review

July 2008

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Message from Ross Garnaut

Very soon after the commencement of my Climate Change Review in mid 2007, it became clear that this subject was one of the most difficult policy problems to come before Australia in living memory.

In evaluating the possible paths ahead for Australia, the Review has benefited greatly from the contributions of several thousand individuals and organisations through public and specialist forums, public lectures and a lengthy submissions process.

By April this year, almost 4000 submissions had been received by the Review on a wide variety of subject areas, from climate science to mitigation and adaptation responses.

This submissions report seeks to reflect many of the salient issues (and solutions) raised. The report is by no means exhaustive and does not attempt to detail all perspectives put forward to the Review – they are too many and varied to be reflected faithfully in a brief overview. The submissions themselves (available on the Review's web site) provide the ultimate record of the input received.

The submissions make an important contribution to one of our central objectives: to set out transparently the issues that will enable Australian governments and the community to make their choices in full knowledge of the consequences of their decisions.

Many of the submissions reflect hours, sometimes weeks, of work by individuals and organisations. I thank all those who have invested their time in sharing their knowledge and perspectives with the Review on Australia's response to climate change.



Professor Ross Garnaut

July 2008

1 Introduction

1.1 The Garnaut Climate Change Review

The Garnaut Climate Change Review is an independent study by Professor Ross Garnaut, commissioned by Australia's State and Territory Governments on 30 April 2007. In December of 2007, the Commonwealth Government joined the States and Territories in participating in the Review.

The Review is examining the impacts of climate change on the Australian economy, and will recommend medium to long-term policies and policy frameworks to improve the prospects for sustainable prosperity. The Review's Final Report is due by 30 September 2008, preceded by a Draft Report which was released on 4 July 2008 and a Supplementary Draft Report expected to be released in late August 2008.

The following report aims to provide a qualitative overview of the body of submissions received and many of the views raised. Reflecting the predominant areas and levels of interest highlighted within submissions, the discussion is divided into seven weighted sections:

- Science, impacts and adaptation to climate change;
- Australia's role in an effective international response;
- Costs and benefits of climate change;
- Australia's mitigation challenge and solutions;
- An emissions trading scheme;
- Research, development and innovation; and
- Uptake of low emissions options.

1.2 The Review's submissions process

Public submissions to the Review closed on 18 April 2008. Interested stakeholders were encouraged to respond to a the Review's Interim Report, as well as a series of Issues Papers that were designed to stimulate targeted public discussion on some of the most critical issues for climate change mitigation in Australia. The Issue Papers released by the Review were:

- Issue Paper 1 - Climate Change: Land use - Agriculture and forestry;
- Issue Paper 2 - Financial Services for Managing Risk: Climate Change and Carbon Trading.
- Issue Paper 3 - Climate Change: What is the Science Telling Us? Is there a need to develop new emissions scenarios?
- Issue Paper 4 - Research and Development: Low Emissions Energy Technologies.
- Issue Paper 5 - Transport, Planning and the Built Environment.
- Emissions Trading Scheme Discussion Paper.

All submissions were treated as documents for the public domain, unless requested otherwise by submitters. Unless specified as 'Confidential', all submissions have been uploaded to the Review website (see www.garnautreview.org.au).

1.3 Measuring the public response

The Review's invitation for public submissions attracted a total of 3960 submissions, including 3001 form-based submissions. Of the 959 non-form submissions, more than half (554) were in response to a thematic publication (See Figure 1). Of these, the Emissions Trading Scheme (ETS) Discussion Paper received the largest response (229 non-form submissions), primarily from the private sector (see Figure 2).

405 non-form submissions were classified as 'General' – having not responded directly to a thematic publication. Among those submissions, mitigation policy proved a popular focus, mainly discussing policy options for an ETS, research and development and transport/urban planning. Over 50 general submissions also incorporated a direct response to the Review's Interim Report into their discussion. Notably, a significant portion of the general submissions made by private citizens (including 3001 form-based submissions) expressed concern over the issue of climate change and called upon government to urgently implement mitigation policy.

Figure 1: Non-form submissions by response type

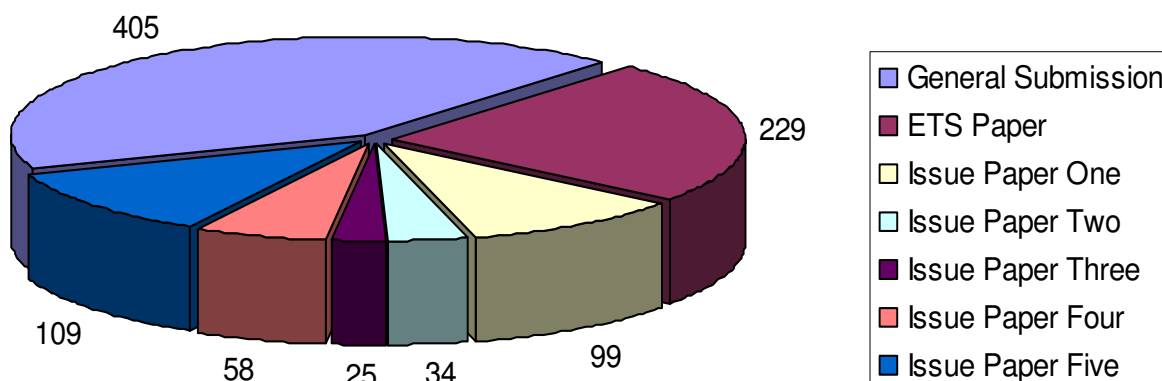


Figure 2: Non-form submissions by sector origin and response type

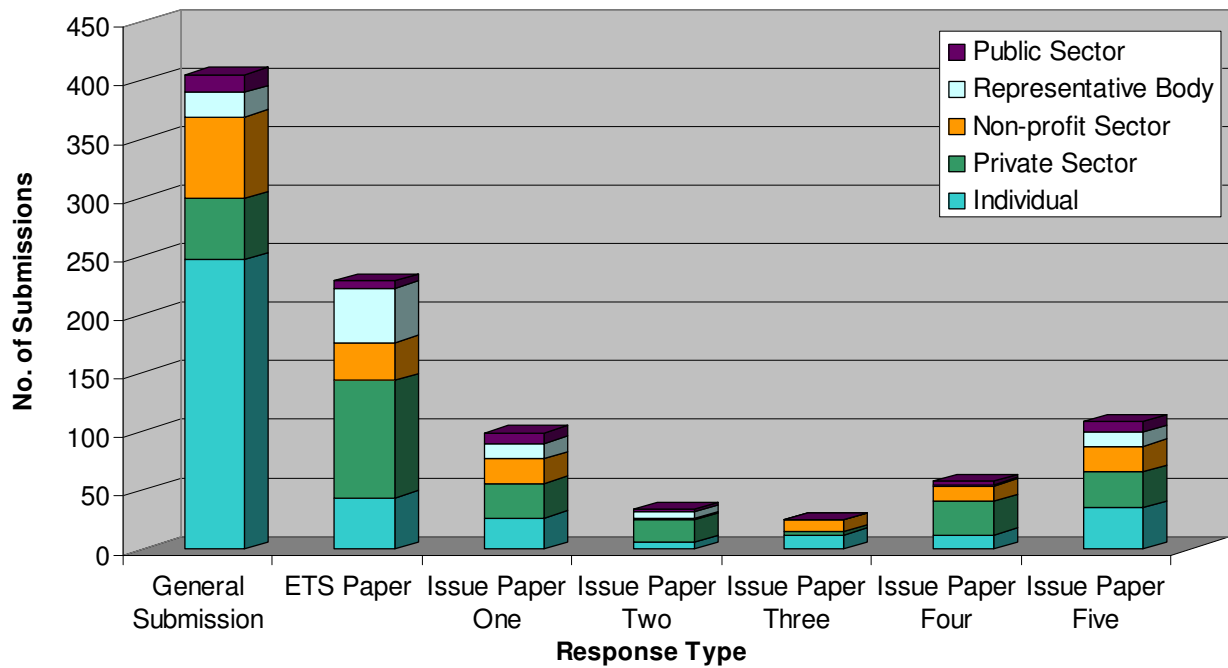
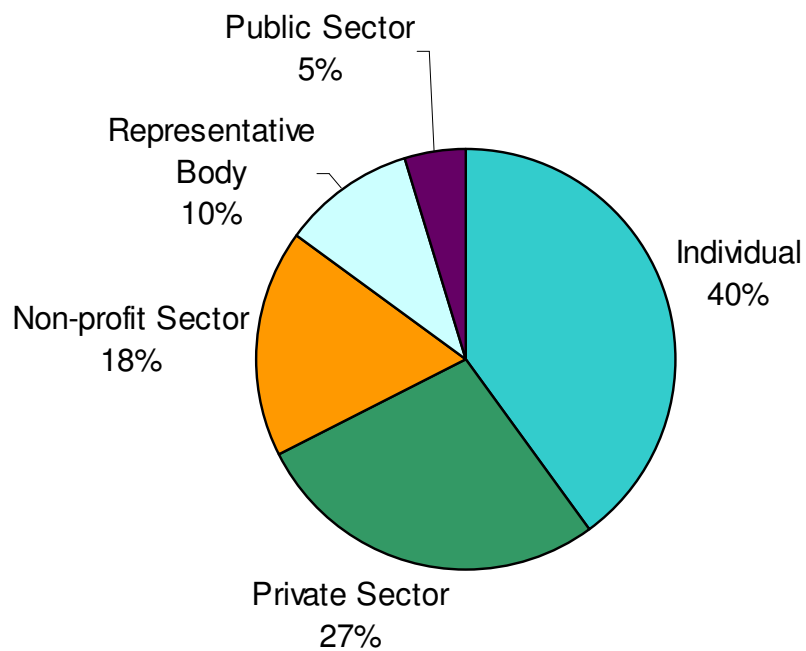


Figure 3: Non-form submissions by sector origin



2 Science, impacts and adaptation to climate change

2.1 The science of climate change

Of the few submissions that directly addressed the topic of science, most were concerned with how science should be interpreted and used to guide mitigation and adaptation policy, with only a few entering into the science debate itself. Strong positions were taken on the role of science in policy development, emphasising the need for science to play the primary role in steering mitigation policy and determining emissions targets.

Stakeholders concerned with the science identified factors, such as political expediency or business-as-usual projections of what is possible, that might exert influence over emissions targets to the detriment of effective mitigation policy. Some submissions, however, added that whilst science should guide emissions targets, the Review needed to acknowledge the limitations of the science when recommending mitigation policy.

The non-profit sector strongly emphasised a need to improve the link between climate change science and public policy. These stakeholders highlighted the urgency of the response to climate change, and criticised the political process for being too slow in responding to science. Furthermore, some also suggested that policy thus far has not adequately considered all aspects of the scientific evidence available. In particular, these submissions argued that the understandings of climate change policy and planning have been largely underpinned by a static and linear conception of ecology, rather than reflecting the complexity and non-linearity of the ecological systems being addressed.

Numerous individuals, coupled with the non-profit sector, strongly recommended that the Review remain critical of the IPCC's scientific conclusions. These stakeholders warned that while the IPCC was generally a sound authority on climate change science, its projections are necessarily conservative. One example raised by stakeholders is the significant variance between recent science's warning on the rate of Arctic sea ice disintegration, and what is now regarded as a dramatic underestimation by the IPCC.

The most commonly cited criticism of the IPCC was on its inability to reflect the latest available science, as a result of its 'ponderous' peer-review process. This was blamed for providing an inadequate basis for global emissions reduction targets and planning, significantly reducing the capacity of governments to effectively respond to the scale and urgency of the threat of climate change. Only a small number of submissions opposed these views, claiming that there was little statistical support to suggest that the IPCC had been too conservative. Similarly, some private and non-profit sector stakeholders expressed the view that conventional policy and planning is often based on mean scenarios, and does not account for low-probability, high-impact events. Their criticism of this approach to science is that it impedes effective planning for catastrophic events.

A small number of stakeholders expressed scepticism over the reliability and validity of climate change science, and therefore the conclusions drawn by the Review. These sceptical viewpoints were generally split between those who argued against the claim that recent changes in the earth's climate were human-induced, and those who denied that climate change was occurring at all. The argument put forward by those in the first category was that variable global temperatures are a normal feature of the earth's climate system and scientific evidence exists that questions the role of human activity in the climate change proposition.

Those submitters that doubted the actual occurrence of climate change argued that whilst a consensus exists, the science was still uncertain. Some went further to say that more certainty (and therefore scientific investigation) was required to justify the costs associated with mitigation. Among the perspectives calling for further scientific investigation, several stakeholders stressed the need for more comprehensive data relating to global temperatures. Beyond this, a need was expressed for localised scientific research into the combined impacts of climate change in regional Australia.

2.2 Greenhouse gas emission scenarios

The issue of emissions scenarios and their various associated impacts was addressed by only a few submissions, mostly from individual academic and non-profit stakeholders. One of the main points raised by these stakeholders suggested that the emissions scenarios which inform mitigation and adaptation policies have been poorly understood, particularly in relation to “tipping-points”. For example, some suggested that certain thresholds, such as the melting of ice sheets, have already been passed. Others noted that although the Earth has not yet fully responded, the existing amount of carbon in the atmosphere probably provides enough stimuli to pass the 2-degree “tipping-point” warned by some scientists.

Another key concern which emerged from non-profit stakeholder submissions was in relation to the impacts of a 2-degree temperature increase scenario on human health. Noting the disruption to global food production and water supply which may result from unmitigated climate change, these stakeholders highlighted the likelihood, and disproportionate impact on the developing world, of widespread famine, growing water shortages, and an increase in vector-borne disease.

2.3 Adapting to climate change

Although the subject of adaptation did not feature extensively in the submission response to the Review, interested stakeholders generally agreed that an effective adaptation response was of particular importance in an Australian context. In light of scientific evidence to suggest that the asymmetrical impacts of climate change would see Australia among the worst affected, stakeholders stressed the need for effective adaptation measures to feature more prominently in Australia’s climate change policies. Concerned stakeholders suggested policy solutions to remove institutional barriers to effective land management, to assign value to non-market goods, and to promote the development of a comprehensive empirical basis to natural disaster management.

‘Successive governments over more than 30 years have savagely cut the [research] agencies that could help us adapt to climate change’

- Professor Neville Nicholls

Some agricultural sector representatives sought to emphasise the disproportionate impact of climate change on Australian agriculture, and the resulting urgency of adaptation policy targeting their sector. Those stakeholders called for policy to focus on research and development, to assist the sector in effectively adapting to a changing climate. Other non-profit stakeholders called for various forms of policy to address biodiversity and land management issues, with particular emphasis on developing regional responses.

3 Australia's role in an effective international response

3.1 General views on an effective international response

Discussion of the international dimensions of climate change featured in a large proportion of submissions made to the Review. All submissions which addressed the international dimensions in detail recognised that climate change was a global problem, requiring a global solution. A number of stakeholders pointed out that the solution would only be truly effective if it was both comprehensive and sustainable.

Many submissions considered how global limits on greenhouse gas emissions should be framed. Suggestions included limiting the global temperature increase to 2 degrees above pre-industrial levels (as advocated by the European Union) or aiming for specific concentration levels of carbon dioxide in the atmosphere by a certain point in time. The proposed levels ranged from 350ppm to 550ppm.

Stakeholders canvassed a wide variety of architectures for cooperative international action on climate change, many of them market-based. Options included a 'targets and timetables' approach; a single global emissions trading scheme or a collection of linked regional and national schemes; a global carbon tax; and sectoral approaches. Some stakeholders saw a number of these approaches being used in combination, and advocated hybrid approaches. Of those who mentioned existing international efforts, such as those under the UN Framework Convention on Climate Change and the Kyoto Protocol, most supported using them as a basis for further action.

3.2 Allocation of the global mitigation effort

The question of how the global mitigation effort should be allocated among countries received much attention in the submissions. Many stakeholders asserted that, in order to establish the most effective global regime to combat climate change, all major emitters had to do their part. This included large developing countries such as China. Others saw the main obligation for mitigating emissions lying with the developed countries. Some stakeholders suggested that criteria should be used to determine the relative effort, such as historical responsibility for emissions, emissions per capita; equity; the relative wealth of individual countries; and the relative costs of abatement for different countries.

A number of stakeholders expressed their views on the Review's proposal for a per capita approach to the allocation of emissions entitlements. Some saw advantages in the transparency and equity dimensions of the approach, as well as the value in using a well-established metric – population. Others voiced concern over whether this approach would be acceptable to all countries and were critical of the fact that the approach did not give enough consideration to the diversity of individual national circumstances, and in particular would disadvantage Australia.

3.3 Australia's role

Stakeholders devoted a great deal of thought to Australia's role in an effective international response to climate change. Many recognised that Australia only contributed a small fraction to overall global emissions. A significant number of stakeholders advocated Australia taking a leading role at home and abroad. This could involve early action in terms of our domestic mitigation efforts and/or a proactive approach in our region and the international negotiations on climate change. Australia leading the way could have a

powerful demonstration effect. The benefits of such an approach might also include reduced costs in the long run and improved environmental effectiveness of our response, it was argued.

In contrast, other stakeholders were against Australia acting 'early', or in the absence of an inclusive global agreement on climate change. In their view, premature action would pose a serious risk to the competitiveness of Australia's trade-exposed, emission intensive industries. Moreover, according to some of these stakeholders, Australia's action would in fact make very little difference to the global emissions reduction effort.

On possible emissions reduction limits or targets for Australia, stakeholders put forward a range of proposals. The submissions featured calls for targets of between 20 and 40 per cent reductions by 2020 (on 1990 or 2000 levels) and between 50 and 90 per cent by 2050. Some stakeholders supported the idea of a conditional offer, for example, 30 per cent below 1990 levels by 2020 and 40 per cent if other developed countries came on board.

Some stakeholders suggested Australia could become a regional hub for low carbon technologies and industries. A view was also expressed that Australia should make the most of its role as a uranium supplier to the world, in order to support 'clean' nuclear power. Some groups supported Australia taking the initiative on regional agreements with Papua New Guinea and Indonesia, though practical difficulties were also highlighted (see below). Assistance with climate science, modelling and adaptation measures for our near neighbours in the Pacific, perhaps delivered through a bolstered aid program, was also recommended. Some groups emphasised the link between sustainable development and combating climate change in developing countries, both through mitigation and adaptation.

3.4 Other issues

Many submissions featured analysis of the international dimensions of emissions trading. Linking the proposed Australian emissions trading scheme with schemes in other countries was generally supported (with some clear exceptions), however views differed on how and when this should be done. Many stakeholders recognised that international linkages would provide opportunities to access lower cost abatement, however some expressed concern that linking would cause Australia to 'import' an overly high permit price. Some suggested that a cap on the use of international units by participants in the Australian scheme would be useful to ensure the bulk of abatement was occurring in Australia and to maintain greater control over the permit price. Others thought that the use of credible international offsets should not be constrained.

A variety of stakeholders drew attention to the mitigation potential of forests, as well as the associated difficulties of realising this potential on a large and sustainable scale, particularly in other countries in our region. A variety of views was expressed on the potential for and benefit of forestry-related emissions reductions. Stakeholders pointed to problems related to avoided deforestation efforts such as leakage, additionality, measurement and monitoring, as well as an overall lack of capacity in some developing countries. Some stakeholders encouraged the Review to consider, in addition to avoided deforestation, issues such as forest management, harvested wood products and reforestation/plantation forestry, in so far as they could contribute to biosequestration of carbon.

Many stakeholders made some reference to technology in their submissions. Some stakeholders advocated increased international collaboration on and funding for technologies such as carbon capture and storage; others argued against it. In relation to developing countries, a number of groups underlined the necessity to increase technology transfer to these countries in order to improve their ability to develop sustainably and with reduced carbon-intensity.

4 Costs and benefits of climate change

4.1 Modelling climate change in Australia

Overall, only a small number of submissions commented directly on the economic modelling being undertaken by the Review, the subject was discussed at length by the non-profit sector. Discussion of this topic generally took the form of recommendations as to what factors should be given consideration in the modelling process.

Non-profit organisations were concerned for emissions scenarios lower than 450ppm to be included in modelling. These stakeholders argued that, even under a stabilisation scenario of 450ppm, the risks of global temperatures increasing beyond 2°C were still unacceptably high, and therefore consideration should be given to lower targets.

The non-profit sector also suggested modelling of comparative impacts - ranging from the impacts of mitigation on job creation rather than job losses, the cost of inaction measured against action, and the impact on the finance and credit markets. Private sector representatives recommended that attention be given to the impacts of international linkages, particularly with the EU and with developing countries, as well as the impacts on small to medium enterprise.

A smaller number of submissions offered more direct criticism of the Review's approach to modelling, particularly focusing on its limitations. Some non-profit stakeholders argued that computable general equilibrium (CGE – that being used by the Review) modelling relies on outdated and inadequate concepts of the economy, and that it does not match the sophistication of the climate models. Other academics felt that using macroeconomic models which aim to describe non-linear phenomena (such as climate change) with systems of linear equations was an inherently inappropriate approach to the task.

A final notable theme which emerged from submissions on this topic related to transparency. The private sector in particular urged that the Review should make the assumptions and scenarios used in modelling available for further assessment and comment.

4.2 Assessing the non-market impacts of climate change mitigation

The non-profit sector urged the Review to acknowledge the range of potential non-market impacts of climate change. Among the impacts discussed, the preservation of biodiversity and areas of cultural significance, such as the Great Barrier Reef, featured most prominently. These areas, it was argued, contain intrinsic value which may be difficult to articulate in economic terms. Another point raised by various stakeholders was that the Review, from an ethical standpoint, should take account of the costs and impacts associated with climate change on future generations.

4.3 Insuring against the risks of climate change

With climate change expected to impact vulnerable businesses and individuals, it naturally followed that a significant number of submissions discussed the allocation of responsibility and costs of insuring against increased risk. The insurance industry stated that it would not insure against all risks associated with nuclear power or geo-sequestration of carbon dioxide, particularly those associated with long term liability. According to this view, government must assume the responsibility of managing these risks to promote uptake of these technologies.

For the most part, stakeholders generally agreed that the insurance industry cannot be expected to bear the significant costs of insuring against the impacts of climate change because the expected losses are increasingly known. After all, they argued, insurance is a facility for reducing the uncertainty related to possible losses, not a facility for coping with expected losses. As such, most stakeholders generally expressed the view that the responsibility for identifying and managing the various risks posed by climate change, such as the possible depreciation of assets, rests with the individuals and businesses themselves.

There was a clearly identified role of government to implement policy and allocate resources in preparation for possible catastrophic outcomes. Building on this point, some suggested that in high-risk areas, government's role should be restricted to that of an information resource, providing information on relevant vulnerabilities. Similarly, private sector representatives suggested that the market should be focused on reducing risk, rather than relying on government grants and assistance. This was a commonly repeated position, with various stakeholders (particularly from within the finance industry) recommending a vital role for government in initiating education campaigns to assist the private sector in forecasting the potential impacts of climate change on business.

The provision of accurate information by government, stakeholders argued, will assist in reducing risk and improving the adaptation response of communities and businesses.

'While Australian companies are generally aware of the emerging risks to business posed by the establishment of a national carbon emissions scheme, there remains considerable confusion over the specific impacts and the actions required by business to respond and comply.'

- Westpac

The insurance industry showed confidence in its capacity to adjust to the risks presented by climate change. However, the industry has indicated that it is likely that either premiums will need to be raised or coverage will need to be reduced to maintain viability if the effects of climate change become more severe. For instance, submissions from the finance industry noted that there are gaps in the ability of the insurance industry to deal with the costs of more extreme events such as sea level rise and flood damage, as well as bushfires. As long as climate change is contained to an increase of no more than 2°C, the insurance industry indicated that it should have the capacity to adjust.

4.4 Managing corporate risk

Those stakeholders focussed on the need to mitigate corporate risk called for mitigation policy to be strongly influenced by risk management principles. A significant source of risk which featured as a matter of concern among these stakeholders was policy and regulatory uncertainty. The Review was criticised for understating the weight that investors

had already given to the principles articulated by earlier government investigations into climate change, and urged the federal government to set its mitigation policy as soon as possible. Stakeholders pointed out that in order for business to have the best chance at managing risk, government must communicate the principles of Australia's mitigation policy, such as emissions targets, as soon as possible.

Some stakeholders, however, still expressed optimism at the ability of corporate business to adapt, claiming that while climate risk is often underestimated, so is the potential to reduce risks related to climate change. One private research group used their submission to show that, according to their measures of risk management, companies adapting to climate change and mitigating risks outperform ASX benchmarks and their less adaptive competitors.

5 Australia's mitigation challenge and solutions

5.1 The impact of mitigation on Australia

Of those submissions which addressed the impacts of mitigation on Australia, two themes in particular were prominent within the discussion. Firstly, many were concerned for the adverse affects of a carbon price on the Australian economy. Emissions intensive industry noted that because a great portion of Australia's economy is built on carbon-intensive energy and exports, there is some concern that these industries will suffer disproportionately from a carbon price and therefore should be compensated.

A second concern which featured prominently in submissions was the income distribution effects of climate change mitigation policy. In particular, the non-profit sector was keen to point out that low-income households would be disproportionately affected by a carbon price, and that policies guided by the principle of equity would need to address this issue. With affordability and access to food and utilities featuring as a main issue, stakeholders noted that policies will be required to counter the impact of mitigation on food security.

Several stakeholders noted that mitigation policy could result in job losses in emissions intensive industry and, accordingly, argued that transitional policies would be required for workers in these sectors.

'Failure to plan for and create a just transition means that the cost of moving away from a carbon-based economy will devolve unfairly onto workers in targeted industries and their communities'

- Greenpeace

These stakeholders argued that government would need to implement policies to address skill deficits in renewable energy and low emissions industries to allow for a redeployment of workers from declining industries. To contrast these perspectives, a smaller number of stakeholders pointed out the potential positive income redistribution effects – such as the potential opportunities for indigenous landowners under a forestry offset scheme.

5.2 Targets and trajectories

Despite (or due to) the scientific uncertainty, emissions reduction targets proved a point of contention among stakeholders. A total of seven targets were proposed to guide Australia's mitigation policy, ranging from 20 – 80% below 1990 levels. Many proponents

of an interim target favoured at least 30% below 1990 levels by 2020; whilst the longer term views were evenly split between calls for at least 60% reductions from 1990 levels by 2050, and 80% reductions. The non-profit sector was the most outspoken on setting targets, particularly in the short term. The private sector reserved comment on specific targets, except to stress the need to allow for flexibility and a reasonable response time when determining a pathway to emissions reduction. A 'soft start' to emissions reduction was favoured by many.

A smaller number of non-profit sector stakeholders advocated the use of strict emissions stabilisation trajectories as the basis for mitigation policy, drawing attention to the need for mitigation policy to recognise environmental 'tipping points' under climate change.

5.3 A market-based approach

A degree of criticism was levelled at taking a market-based approach to climate change mitigation, from individuals and representative bodies. The strong theme underlying that criticism was that climate change mitigation requires a unique partnership between government, the economy and the community, and should not be attributed to the economy alone as "the greatest and widest-ranging market failure ever seen". Emissions intensive industry saw economic instruments as the most suitable tools to address climate change, in contrast to calls from the non-profit sector for the federal policy response to be built on an interventionist 'war-footing'.

'[Climate change] is a political conflict between short term self interest and long term economic responsibility, and it is a technical challenge to create economic incentives that will drive down the cost of carbon pollution free energy systems. But before we can act on the technical solutions, we need to solve the political problem.'

- Wentworth Group of Concerned Scientists

The overall emphasis was that role of the market should not be allowed to detract from the need for policy to reflect political and individual responsibility.

5.4 Mitigation policy options

A range of non-market mitigation policy options were mooted through the submissions process, as alternatives to emissions trading or a carbon tax. Many arose in response to claims that some sectors were unsuitable for inclusion under an emissions trading scheme (although all sectors claimed suitability for participation in any associated offset scheme).

Congestion charges were proposed by road use groups and local governments to mitigate transport fuel emissions whilst avoiding the risk that an ETS could pose of 'double charging' consumers for their (relatively inelastic demand for) fuel.

Reform of waste management regulation was identified as a more effective tool to rapidly engage the sector than a low carbon price, due to the very low price paid by consumers for waste management services and the conflict within the sector between the price disparate waste recovery and landfill industries.

A diverse range of stakeholders were of the view that land use and land use change, such as native forest management, was amenable to regulatory control at a federal level accompanied by appropriate transitional assistance, and that regulation was a far simpler

method of controlling this major source of emissions than using the market. State governments also mooted the possibility of an enterprise-level carbon neutral target as a way to engage small agricultural stakeholders in the mitigation effort.

A number of environmental activist groups submitted that a moratorium on new coal-fired power stations and extensions to existing coal fired power stations was a necessary feature of the mitigation response. In contrast, some within the private sector were more partial to the use of incentives – such as substantial grants for technological deployment - to attract investment in abatement, rather than penalties and restrictions.

Carbon taxes were an appealing policy tool to many stakeholders, due to their comparative simplicity over an ETS. Border tax adjustments were also noted as a more equitable, effective and transparent method of avoiding carbon leakage than freely allocating permits to trade-exposed agents under an ETS. The few sustained critiques of carbon taxation (and price caps, which were likened to a carbon tax) were more concerned with the aim of mitigation policy being lost by not showing a clear linkage between emissions, efficiency and costs. They claim that mitigation policy must have an educational, as well as an emissions-reduction, purpose, and that applying a tax would not drive the private sector innovation or emissions-linked awareness necessary to make a rapid impact on emissions levels.

5.5 Form-based submissions and petitions on mitigation

Three groups were responsible for 3001 form-based submissions to the Review - The Wilderness Society, Rising Tide and a group of concerned Melbournians. GetUp! also collected 30583 electronic signatures on a petition addressed to the Review.

The Wilderness Society received 2897 signatories for their single-issue form-letter submissions. They sought swift action to mitigate climate change, and requested that the true (economic) value of native vegetation, in particular native forest, in storing carbon and achieving environmental outcomes be reflected in the Review's policy recommendations. GetUp!'s 30583 petition signatories also supported this message, calling for a full carbon assessment of logging or converting native forest to plantation (particularly those in Tasmania) when compared to its sequestration value.

In its petition, Rising Tide (87 form-based submissions) made a series of recommendations to guide mitigation policy strategy. The submissions, like those of The Wilderness Society, reiterated the urgent need for a response to climate change – suggesting government intervene on a 'war footing' to implement sweeping technological and lifestyle changes toward a low-carbon economy. They posited that market-based mechanisms were not the most effective means of doing this, as they do not directly address the causes of climate change – particularly unsustainable economic growth that relies on over-consumption. Australia's responsibility to implement urgent domestic mitigation, but also to financially support developing nations to do the same, was also emphasised. The coal industry was a particular focus of the Rising Tide submissions, with demands for policy to ban new coal-fired power stations, to account for the emissions in coal exports, to transition coal-industry-dependent communities, and to stop public financial and research resources towards carbon capture and storage technology. Signatories called for policy to rapidly reduce dependence on emissions intensive transport and energy sources and to reduce emissions in all sectors.

A smaller group of petitioners from suburban Melbourne (17 submissions) took issue with the emissions targets modelled by the Review. They argued that the Australian community would accept challenging targets if offered genuine leadership that explained the consequences of slow or under-performance in mitigation. Their preferred targets were below 450ppm, and aimed at solving the problem of anthropogenic climate change through absolute risk minimisation in mitigation policy design. This position was consistent with that taken by prominent national environment groups in their submissions.

6 An emissions trading scheme

6.1 Building effective carbon trading markets

A small number of stakeholders questioned the ability of a carbon-based ETS to broadly distribute the costs of mitigation.

The market-based cap and trade model received broad general support, providing the system was flexible and responsive to changes in science and international policy obligations. Some stakeholders flagged the need to consider the ability of parties to participate in an ETS. For example, the public sector (and parts of the agriculture sector) suggested the farming community might lack the financial and information resources to participate in trading.

The most consistent message on mitigation policy from the private sector was that a national approach to an ETS and other mitigation policy tools is needed, with inter-jurisdictional consistency. The current range of regulations, programs and policies at both the federal and state level must be rationalised upon the introduction of an ETS. However, business investment under those preceding schemes must be acknowledged (and not penalised) by the design of any future carbon market.

Some stakeholders proposed the early stages of an ETS be transitional for business – for example, through voluntary participation in an ETS or full coverage with no penalties - to protect business from the shock of a carbon price. This argument was primarily made by the private sector and its representative bodies, supported by elements of the public and non-profit sectors who expressed concern for the ability of some industries – particularly those that are trade exposed - to manage costs.

Criticism was received from a range of non-private sector stakeholders on the prospect of sheltering firms from the impact of a carbon price. Their key message was that it is not the role of government to compensate investors for poor investment decisions. In addition, compensating for a carbon price, or blunting its signal, would build the market failures that have contributed to Australia's high emissions intensity into the carbon trading market design. Further, some warned that if selected firms were to receive special treatment, costs to the community or other parts of the economy may be greater, and result in inequitable outcomes. Some claim that the private sector has been aware of the risks of carbon limits and pricing, as well as the science, for many years and that sovereign risk in this area should have been firmly built into business planning.

'Incumbency does not accrue a right to pollute, nor does it restrict the right of government, at the behest of the people, from changing regulations to better serve the community.'

- J. Burke

6.2 Permit issuance and obligations

The permit allocation method to be used under an ETS – that is, whether permits are sold or freely allocated, or a combination of the two - drew a very high level of comment.

‘The approach to permit allocation will be a contentious issue as it will determine relative ‘winners and losers’ throughout the economy at the early stages of the ETS.’

- KPMG

Auctioning of emissions permits was largely discussed as an equity issue. Environmental and social justice stakeholders saw full auctioning as a mechanism to avoid windfall gains, barriers to new entrants and a lack of responsibility by emitters. The agriculture sector expressed concern that unless permit auctions were divided by sector and baseline, some sectors would be uncompetitive with larger parties at auction. Those likely to have a large liability under the scheme expressed concern about the ‘balance sheet’ impacts, were permits auctioned infrequently. Fund managers and trading associations were also wary of the costs associated with initial large auctions.

Debate on administrative (‘free’) allocation of permits raised a number of questions on the philosophical approach behind any ETS adopted. There appears to be a widespread assumption that free allocation would only be considered for emissions intensive industry. An equitable ETS is discussed by the private sector as one that evenly distributes the cost of climate change across the economy; whereas the non-profit sector and many individuals saw an equitable mitigation tool as one which allocates costs to those who incur them – in line with the ‘polluter pays’ principle.

Those arguing in favour of administrative allocation of permits claim that it would minimise sovereign risk, provide greater investor confidence and account for the fact that, in the short to medium-term, many businesses will be unable to alter their emissions path or pass on costs to consumers. The revenue stream that free allocation would keep in the private sector (as opposed to the transfer that would occur with full auctioning of permits) also came under question.

‘The purpose of allocation is to initiate a market for carbon on an efficient and equitable basis, rather than to create an indirect tax and revenue source for government.’

- BP

Concern was expressed by low emissions sectors that free allocation would disadvantage new (low emissions) market entrants, and entities that have taken early action to reduce emissions, by prolonging the sectoral advantage of heavy emitting sectors in domestic markets.

Most private sector commentators were in support of a hybrid approach to permit allocation – characterised by permit auctions and select allocation to a small group of stakeholders that could prove material disadvantage as a result of the scheme. This was emphasised as particularly important in the early stages of an ETS, as was the need to design the allocation system as an evolutionary process that could eventually phase out free allocation. Only a few stakeholders from the finance sector did not see the allocation method as having influence over market efficiency.

Were free allocation to be undertaken, many argued that it should take efficiency into consideration. A small number of stakeholders raised the prospect of free allocation to facilities that meet best practice emissions benchmarks, with the rest of the market participating in a permit auction. Some emissions intensive industry also argued that 'best-in-class' benchmarking should replace 'best practise' when assessing emissions performance as a criterion for free allocation.

Proponents of conditional free allocation specified that it must be discriminatory and accompanied by requirements to make significant cuts in emissions, in order to avoid the market failure experienced by the EU ETS. A mixed group of high profile stakeholders suggested that if the purpose of free allocation was to compensate, then that objective would be better met outside of an ETS to avoid distorting the market with excess or mixed value permits.

6.3 Sectoral coverage

Most major emitters and electricity generators supported an all-inclusive ETS with coverage of all industry sectors, gases and fuels. There were mixed views on the viability and affordability of covering international aviation and marine fuel bunkers under an ETS, with little justification for why they should be excluded other than the likelihood of carbon leakage.

A disparate group of stakeholders suggested that an ETS could phase in sectors, with the highest emitters first, as a means of testing the market whilst still ensuring its integrity. The agriculture sector was particularly focussed on the value of establishing a parallel voluntary scheme to transition the sector (with "a trigger point, not a date set, for inclusion of agriculture and forestry" - Queensland Farmers Federation). Environmental groups supported the exclusion of agriculture, land use and forestry, until such time as those sectors had developed robust emissions measurement tools. Many groups asserted that any excluded sector must be subject to complementary policies that seek similar emissions reductions, and be provided with the tools to "self-assess their emissions, and information on how to improve efficiency" (CPA Australia).

The point of obligation for emissions accounting, for the purposes of an ETS, attracted only a moderate amount of discussion. Concerns about the complexity and cost of designing and implementing an ETS with a low-level acquittal point. Those same stakeholders, chiefly representative bodies, were further concerned that should the point of obligation rest downstream, high transaction costs, coupled with the secondary carbon price from increased inputs and an inability to pass on carbon costs would "disproportionately impact smaller traders under an ETS" (Waste Management Association of Australia).

Accounting for emissions further downstream had a lot of support from academics and low emissions industry. The point of consensus amongst proponents was that an ETS, as the centrepiece of Australia's mitigation effort, must address the demand side equation by engaging individuals as participants. There was a small, but diverse, selection of stakeholders that argued the obligation should be on actual emitters, to ensure the carbon price is felt by those who have control over emissions. Setting incentives at decision-making levels was an opportunity identified to reduce the stock, as well as the flow of emissions.

'The [current] scheme design is reliant on a trade mechanism that does not provide incentives for additional action to be taken downstream by organisations and individuals.'

- Greenfleet

6.4 Mitigation in the agriculture and forestry sectors

There was a particularly strong field of submissions focused on the unique status of these sectors in the economy and their ability to participate in a national ETS.

In general, the agriculture sector strongly articulated that most of their 'low hanging fruit' (abatement opportunities) had been exhausted in Australia's drive to meet its Kyoto Protocol target through reduced land clearing. As a result, landholders will need assistance to make a low cost transition to an ETS and avoid a carbon price shock. The argument made was that LULUCF and agriculture has borne the national abatement burden, and their commitment beyond the implementation of an ETS should not be "disproportionate to that of the fossil fuel based industries" (National Farmers Federation). Others suggested there was much opportunity for low cost mitigation in agriculture and forestry, and that the inclusion of the sectors would reduce the cost of abatement to the domestic economy, and the burden on other sectors in meeting targets.

There was also some concern from the forestry and agriculture sectors that unless they were covered by an ETS, they would not have the protection or assistance that they will need to remain internationally competitive as a result of secondary carbon costs.

The level of debate received on the impact of an ETS on competitiveness should it not include the agriculture and forestry sectors would suggest that mitigation efforts cannot wait until all sub-sectors under the LULUCF and agriculture banners are fully prepared for inclusion in an ETS. The forestry sector does not want to be held back from participation in an ETS by its grouping with other (less prepared) land use functions, and environment groups are concerned that patchy coverage of the land use segment of the economy would create loopholes in the permit and offset trading scheme design. Urgent decisions on the sectoral coverage, and Australia's position with regards to bio-diverse reforestation and revegetation under an ETS, were requested by industry and the non-profit sector to provide as much lead time as possible.

A consistently identified barrier to the inclusion of agriculture and LULUCF in an ETS is current deficiencies in emissions measurement from those sources. Environmental groups expressed concern on the inclusion of native forests in ETS accounting processes, given the unresolved and political nature of that debate. The public sector, however, was generally in agreement that emissions measurement did not need to be infallible to qualify agriculture or LULUCF for inclusion in an ETS.

The public sector did go on to stress that agriculture's unique sectoral profile placed additional responsibilities on mitigation policy to be sensitive to non-market impacts. Consideration of the whole-of-community impact of policy options for regional and rural areas, and the impact of compliance costs on small business were identified as critical priorities in the policy design phase. Ambitious targets and allowing for brokers to act on behalf of groups of farmers were noted by the public and non-profit sectors as an important way to reduce participation costs for these communities.

There was also comment on the complicated and inconsistent accounting approaches to LULUCF emissions. Views were mixed on whether Australia's rules should be consistent

with existing international approaches, or whether Australia should attempt to influence international rules to be more reflective of the LULUCF emissions cycle.

6.5 Operations of the permit market

Many comments were received on the idea of a price cap. Stakeholders from the finance sector voiced their concern that price caps would act as a carbon tax, and provide little incentive for innovation; and environmental groups warned that the environmental outcome of an ETS - emissions reductions - may not be achieved if permit prices were limited. Others, including some industry stakeholders, claimed that the advantages of a price cap 'significantly outweigh the claimed shortcomings.'

Strategies for fostering forward markets was a central discussion point of the submissions made in response to the Issues Paper released by the Garnaut Climate Change Review on Financial Services for Managing Risk. The finance sector stressed that unlimited banking of emissions permits was a necessary feature of a sustainable market, belying claims from the agriculture sector that unlimited hoarding could impact the affordability of permits for late entrants to the market.

Permit borrowing proved more contentious. A cross-section of the private sector saw borrowing as necessary for scheme flexibility, but qualified that view by suggesting firm regulation as an ETS design feature. A few of the more prominent conditions attached to support for borrowing were the need for appropriate and regular market disclosure on the supply and demand of permits and their use, and restrictions on borrowing between phases.

The varied opponents of permit borrowing were concerned that the feature might incentivise borrowing from the future - increasing pressure on the government to intervene, release additional permits and weaken the credibility and effectiveness of the scheme. A few from the finance sector even went so far to say that borrowing would likely have a negative impact on forward markets, dampening the incentive for least cost abatement and innovation.

6.6 Domestic offsets

The Review suggested that for sectors not covered by the ETS, it may be appropriate for them to create offset credits from their emissions reductions. A number of points were raised in submissions on the impact of industries providing offsets, but not participating in an ETS. A few sector-based stakeholders made a case for agriculture and waste being able to participate in an offset scheme immediately, particularly on an aggregate basis, until such time as their respective emissions monitoring capacities were strong enough to provide a basis for measurement and full coverage under an ETS.

The private sector at large responded with a general statement to the effect that if a sector can implement sufficient measurement and verification protocols to participate in an offset regime, it should be covered by an ETS. A unique situation identified by the forestry sector and environmental groups for value-added abatement was the recognition of strategic fire management as carbon creditable. Wildfire emissions are not counted in Australia's emissions profile, but improved forest management (to reduce fire) is apparently a market-ready solution to address the source of a huge proportion of Australia's actual emissions.

The most common reference in the offset market was forestry activity. Environmental groups and the forestry industry both called for complete accounting of all carbon flows through the sector, but they deviated in their understanding of carbon capture. The forestry sector called for the carbon capture value of wood to be credited as an offset; whereas environmental groups and low emissions industry wanted the 'green' carbon of native forests and biodiverse land use to be accorded special status due to its environmental value. With neither party to the debate able to provide conclusive data on the proportionally higher weight of their claims, state governments defended their position that until further research into carbon storage claims had been undertaken, the rules should not change.

A number of stakeholders also suggested that federal policy will need to specifically address the issue of additionality and the forestry sector. The forestry industry are calling for all business, not just sequestration beyond business-as-usual, to be recognised as offsetting under an ETS – an approach that critics say is inconsistent with the Kyoto Protocol and UNFCCC. In contrast, a diverse range of non-industry stakeholders called for baselines (for offsets and permit allocations) to reflect business-as-usual. In this way, they said, only additional reductions or activity will be credited, maximising the mitigation effort and allowing for a level playing field.

The environmental effect of offset regulation was a cause of concern for the agriculture and public sectors, as well as environmental groups. Stress on biodiversity and water resources as a result of forestry plantations for the purpose of offsets were discussed, particularly by stakeholders in regions where the offset plantation market is already in effect. Permanence requirements for forestry offsets were also debated as of environmental and economic importance – with the forestry sector claiming that the current requirement of 70 years is a disincentive to participation, and the public sector and environmental groups claiming that regulation must be focussed on even longer-term sequestration outcomes.

Necessary elements for shaping the offset market were mooted by the finance, agriculture and public sectors. Chief among them was the desire for a single national system to replace all existing schemes. The early development of a national offset or early action credit framework was seen by existing carbon traders as an opportunity to boost supporting infrastructure in preparation of the ETS; whilst some voices cautioned against imposing too rigorous or complicated standards on any offset scheme, lest they deter small agriculture and forestry stakeholders from participating.

6.7 International linkages

There was almost universal support for global action and widespread support for linking Australia's mitigation efforts to those overseas. The finance sector very strongly encouraged links between domestic and international schemes as a means of "promoting strong and efficient forward markets" (Merril Lynch). Many emissions intensive industry stakeholders were concerned that Australia was making its mitigation case too strong in the absence of a credible and effective global market. Some of their concerns related to the security of electricity supply, the risk of inflation should the ETS be linked in with the EU system, and the risk of carbon leakage should the economic landscape prove hostile to emissions intensive industry. Environmental groups added to the debate that Australia should tackle the potential for carbon leakage by accounting for emissions embodied in exports.

6.8 Trade-exposed emissions-intensive industries

The case for compensating trade-exposed emissions-intensive industries (TEEI) proved a rigorous point of debate during the public consultation process. The private sector made clear that until such time as international competitors faced similar carbon constraint, trade exposed industry must not be disadvantaged in their international markets by a domestic carbon price. Some representative groups went on to say that TEEI should also be buffered from the effects of other mitigation policies, such as a mandatory renewable energy target (MRET), given the impact on competitiveness that passing on expected costs to international markets would likely have. Assistance was requested to meet the carbon costs of both direct and indirect emissions, and to protect new investments.

The private sector was clear in communicating the need for discretionary assistance to address the distortion in TEEIs; but no two submissions made the same case for assessing that exposure and determining eligibility for assistance. This point adds weight to claims in a number of submissions that it will be impossibly complex for a single agency to accurately make that same judgement, and that a simple tool must be devised to assess the basis for compensation. Environmental groups and some academics suggested that a border tax adjustment or a rebate for the portion of output that is trade exposed would be a simpler and more transparent approach to assistance (rather than the more common tool suggested - administratively allocated emissions permits).

Academics and the public sector also took up the question of whether trade exposure or energy intensity of industry were the most appropriate measures for allocating compensation. The capacity of the private sector to adjust to a carbon price was seen as another function of participating in a competitive global market; whereas communities and workers in industries that will likely be transformed as a result of an ETS were seen as more vulnerable and thus deserving recipients for government assistance.

A number of private sector organisations made suggestions to improve the assessment method proposed in the ETS Discussion Paper. A need to make the assessment criteria accessible to mid-level and small manufacturing operations that compete with low cost imports was expressed, with concern that a sectoral test could disadvantage some facilities that would otherwise qualify for assistance. Environmental groups called for any assistance assessment to take into account existing subsidies and favourable tax arrangements, and industry stressed a need for any assistance to be in line with World Trade Organisation principles and Australian trade obligations.

'Assistance for TEEIs should be decided on a case-by-case basis, to avoid establishing arbitrary criteria which may not adequately reflect the competitive impact on individual industries or sectors.'

- Federal Chamber of Automotive Industry

Some emissions intensive industry stakeholders suggested that if free permits were provided for assistance, they should be excluded from the trading scheme, to ensure that the proceeds of the permits would not result in windfall gains. Most opponents of administratively allocated permits, however, were wary of windfall gains secured through on-selling carbon costs that were not incurred, as occurred under the EU system, rather than the potential to incur windfall gains through the ETS itself. Very few of those emissions intensive stakeholders agreed with the low emissions energy sector and environmental groups that such permits must also involve tangible commitments to reduce greenhouse gas emissions.

'There should be no conditions attached to permits.'

- CSR Limited

6.9 Governance and use of permit revenue

Based on feedback from the submissions process, the proposed Independent Carbon Bank (ICB) is a welcome governance institution. To maintain credibility and avoid perverse outcomes, a few fundamental clauses were raised by stakeholders as critical to the enacting legislation. Business groups emphasised the need for a clear separation of powers between regulatory bodies, measurement compliance agencies and any carbon bank; noting that the responsibility for establishing ETS rules must be that of elected government, not the ICB. A number of future participants in an Australian ETS expressed concern that allowing a regulator (the ICB) to participate in the market would erode confidence in the scheme and place unrealistic burdens on the design of a governance scheme. Some comment was made on the role of the ICB in fostering forward markets, mainly emphasising its role in transparently disseminating market information, or suggesting more interventionist policies such as applying a transaction charge to trading to reduce speculation. Legal, regulatory and environmental stakeholders aligned to call for the ICB to have a mechanism (or parallel central reporting agency) to enable adjustments to trajectories, and to allow for change in national reporting requirements as technology and information improves.

An ETS that auctions permits will generate revenue; the use of which also attracted a great deal of speculation. A number of business groups were adamant that any ETS should be revenue neutral, and resources should be directed towards adjustment for small and medium enterprises that will be affected by secondary carbon prices. Building efficient infrastructure and reviewing all existing legislation for its impact on climate change mitigation were also mooted as possible targets for revenue from the ETS.

A broad cross-section of stakeholders from the non-profit and private sectors highlighted the vulnerability of low income households in a carbon-constrained and climate-change affected world. Using permit revenue to assist these households to adjust to climate change attracted no criticism, only requests that the assessment and delivery of such assistance be flexible in acknowledgement of the varied impacts to be felt across the country.

Investing in research and development was one of the two most-cited potential uses of permit revenue. Environmental groups and industry aligned in their belief that using revenue to fund research and development into low emissions technology would increase the rate of technological innovation, lower the cost of compliance, create knowledge-based export opportunities and demonstrate the effectiveness of experimental technologies to international markets. The low level of private investment in R&D by the high emissions energy generation sector, despite their ability to pass on costs to consumers, was also cited as a reason for public investment to avoid diverting assistance to the sector.

7 Research, development and innovation

7.1 Assisting early movers

The ETS has been described as the centrepiece of the government's mitigation policies. However, many submissions from the public and private sectors argued that a carbon price alone would not be sufficient to drive new technologies to market in the timeframe

available. A nationally consistent set of complementary policies and tools were called for to assist the ETS in mitigating greenhouse gas emissions.

A number of private sector representative bodies went on to say that there is a specific role for policy to assist early movers to bring efficient technology to commercialisation, and to promote its rapid uptake, in the absence of any market incentives to do so. Accelerating depreciation of capital investments, clearly communicating industry best-practise technology to small and medium-sized business stakeholders, and facilitating a greater alignment between industry and research needs (among other things, to avoid unnecessary duplication in such a small research community) were all identified as constructive roles for government.

They also claimed that the public sector must respond to cross-border intellectual property risks, so that the developing world can be engaged more rapidly in domestic plans for transformational technology. Equally, the public sector advocated a private sector approach to public support of innovation. This was characterised by allowing for risk and failure in technological projects, indeed preferencing immature technologies for assistance, and basing incentives on meeting efficiency outcomes, rather than an assessment of inputs.

'Innovation can be fostered simply by providing tangible signals that critical and imaginative thinking is valued and esteemed within organisations and in the nation as a whole.'

- CSIRO

7.2 Barriers to innovation

Low emissions industry claimed that a fundamental barrier to innovation is the way that high emissions activity has shaped the domestic political and economic landscape. Most policy and technological infrastructure, in particular the National Electricity Market, were not designed with enough flexibility to allow for new technological developments or alternative energy sources from alternative locations. Biofuel producers, for example, expressed frustration that policy settings based around large-scale production of fuel were blocking small enterprise from participating in the market.

A consensus among environment groups and many academics was reached on the need for government to remove perverse subsidies for fossil fuel across universities, research centres and the tax system, and instead direct those resources towards low or no emissions technology. Environment groups claimed that technological solutions already exist for many of the major sources of domestic emissions, but fast policy initiatives that recognise positive and negative externalities were needed to ensure that these are deployed.

On the flip-side, emissions intensive industry identified technological bias written into mitigation policy as a barrier to innovation. The MRET is said to have displaced other lower cost low emission alternatives and will result in the private sector deferring investment in low emissions technology due to a depressed carbon price. By mandating a quantity of renewable energy, they claim that the government are handing competitive advantage to some industry at the expense of others. A transitional renewable energy target (RET), phased out on the introduction of an ETS, was mooted as a possible policy tool that would create incentives to innovate without impacting the efficiency of the ETS.

“An ETS can only deliver the lowest cost outcomes if the market has the opportunity to take up the most economic option from the proven ones available”

- Alstom

A broad range of (non-emissions-intensive) stakeholders submitted that policy already favours some technologies over others, and the role of government will be to necessarily pick low emissions ‘winners’ through policy and assistance. Academic proponents of this approach recommended that, given the limitations of government support, renewable energy should be prioritised for public investment over untested innovation due to its stage of development, and ability to be rapidly deployed for immediate impact on emissions levels.

The renewable energy industry argued for the MRET to be extended and expanded to provide investment certainty until the carbon price was at a level that enabled renewable energy to compete with coal power.

7.3 Low-emissions coal

Low-emissions coal attracted a lot of media attention during the Review’s public engagement process, and was comprehensively explained by a number of industry investors in their submissions. These papers presented the technology, illustrating the expense and the time required to bring the technology to commercialisation, and highlighted commitments made by the previous federal government to assist industry and their communities to remain viable through the development of carbon capture and storage for coal-fired energy plants.

“The replacement of coal-fired energy plants with renewable energy sources would cost the same as assisting coal-fired plants to capture and store their carbon. The latter option would, however, mean that the coal industry would not bear the full domestic burden for emissions reduction”

- Chevron

A large number of petitions and individual submissions were received by the Review in opposition to public investment in low-emissions coal, claiming that public funding for carbon capture and storage would constitute a perverse subsidy.

8 Uptake of low emissions options

8.1 Market failures, infrastructure and existing policies

A broad section of the Review’s stakeholder base suggested that rising energy prices as a result of an ETS were not powerful enough drivers on their own to drive the uptake of low-emission technologies. Many stakeholders proposed that the success of a national climate change mitigation effort would hinge on changing consumer and business behaviour to adopt a low emissions lifestyle and economy.

Stakeholders reported a wide range of barriers that may impede the adoption of low-emission technologies, including insufficient information, landlords making decisions on behalf of tenants and upfront access to capital, although a small number of submissions suggested that all these barriers are a function of information problems. The building sector attracted special mention in regards to the role of information barriers.

The need to rapidly shape education and training policy responses to meet innovation and industry development needs in a carbon constrained economy was noted by academics as a critical feature of the mitigation and adaptation plan.

Several submissions suggested that Government had a role in providing information to the community, such as helping consumers assess their transport options and assisting large organisations to develop mitigation programs such as mobility management. The public sector acknowledged that adding behavioural interventions to existing technology rebate policies (for example) would likely improve the uptake of the technologies, and reduce market failures.

A number of petitions and environmental campaigners also saw a role for government in promoting a reduction in dietary intake of animal products, accompanied by a transition program to move graziers into more sustainable agriculture.

Non-profit groups and governments argued for a key role in regulations to overcome market failures. There was some private sector support for regulations to provide a level playing field or drive the uptake of particular technologies, although many private sector submissions suggested that additional incentives to reinforce positive behaviour would be more effective.

A large number of submissions highlighted the key role of infrastructure in assisting in the uptake of low-emission opportunities. Several of these suggested that existing regulations and subsidies to fossil fuel industries may impede the uptake of low-emission opportunities.

8.2 Energy efficiency

Energy efficiency was raised as a major issue by a large number of stakeholders, with several stakeholders suggesting that there are major barriers to energy efficiency but also significant potential for emissions reduction. In particular, energy efficiency was proposed as an early mitigation option that could defer the need to invest in expanded generation and cushion the economy from the transition to a lower-emission economy.

In addition the broader set of market failures, stakeholders suggested some specific barriers to energy efficiency, including the structure of funding for energy distributors and retailers and the lack of incentives for households and businesses to lower demands on the electricity grid.

Academics and non-profit organisations suggested a broad range of tools to drive higher energy efficiency, including public sector purchasing mandates, subsidies, mandatory energy ratings and minimum standards for buildings, vehicles and appliances. Social justice stakeholders noted the potential for energy efficiency to ameliorate the impact of higher energy prices, and proposed assistance for low-income households to improve their energy efficiency through investment in the public housing stock, domestic energy audits and retailer-based energy efficiency schemes.

A number of submissions suggested a 'National Energy Efficiency Target' to drive energy efficiency improvement and a 'National Energy Efficiency Commission' to coordinate action on energy efficiency.

8.3 The built environment

More than any other issue, submissions on the built environment called for federal mitigation policy to harmonise the regulatory landscape. There was a demand from across the stakeholder spectrum for energy efficiency goals and strategies (but not standards) to be nationalised, comprehensively regulated and targeted at low income households.

Regulations for buildings, in particular the Building Code of Australia, drew substantial attention. Many stakeholders suggested the need for a simpler system of building regulation, especially reducing the differences in local government and State and Territory regulations. However, some submissions highlighted the unsuitability of a single set of building standards in a nation with such significant climatic differences between regions, and the dangers of 'lowest-common denominator' standards arising from national system.

There was more limited debate about the overall role of the building standards. A few sources criticising the inflexibility of building standards, but the majority of submissions suggested that tighter building standards would be critical for emission reductions and lowering the cost of abatement.

Several sources suggested that building standards need to consider wider issues such as waste, water efficiency and embodied emissions. The forestry sector in particular felt that full carbon lifecycle accounting should be used in developing building standards, to avoid perverse outcomes from standards that only focus on operational energy. This argument would see wood products gain greater favour than high mass materials (i.e. concrete and steel) that generate more emissions in their manufacture than timber.

In addition to new buildings, the existing building stock was highlighted as a major source of emissions. Diverse stakeholders suggested information strategies and regulations for renovations to drive abatement in existing buildings. The property industry focused particularly on incentives such as accelerated depreciation and market-based incentives to drive renovations. The building industry joined with environment and welfare groups in stressing the need for any initiatives aimed at the rental market to be designed as 'least cost per household'.

8.4 Transport

Following the pattern of other discussion points in the mitigation debate, the transport sector called for an integrated national transport plan to guide a concerted and strategic emissions reduction effort. Interested stakeholders – including automobile and rail industry representatives – expressed their concern over the lack of consumer choice to reduce dependence on fossil fuels, and called on policy to encourage genuine competition between engine/fuel technologies and transport modes.

Shipping and rail were generally perceived as having been displaced in passenger and freight transport in favour of road infrastructure, despite their potential to achieve deep cuts in emissions. A limited number of stakeholders called for additional fuel excises and mandatory rail use targets to attract greater investment in the public transport and commercial rail.

Non-profit groups joined with the private sector in suggesting that government inaction has shaped the domestic transport emissions profile, with social and environmental justice campaigners highlighting the power of perverse subsidies in the transport sector. Current

taxation arrangements, particularly the fringe benefits tax, were widely condemned for providing an incentive for increased car use. However, while many submissions suggested the importance of reforming fuel and infrastructure subsidies for the road and air transport sub-sectors, almost all submissions expressed a preference for including transport in an ETS as opposed to introducing separate fuel taxes.

An element of the transport discussion was focussed on how road and air infrastructure congestion contributes to transport emissions. Road transport groups advocated increased investment in freeways. The aviation sector made a similar request for improved airspace management and airport infrastructure, and highlighted regulatory impediments to improving efficiency in the sector, such as noise considerations in flight-paths and curfews.

In contrast, public and non-profit sector representatives claimed that further investment in road infrastructure would drive higher emissions; suggesting instead heavy investment in public transport infrastructure, behavioural change tools, parking fees and other charges to drive the use of lower-emission modes. A wide range of organisations, including automotive groups, supported congestion charges.

Barriers and incentives to improve fuel efficiency and the use of alternative fuels attracted a great deal of discussion. Aviation companies sought accelerated depreciation to drive the uptake of more efficient aircraft. In road transport, government was urged by transport and environment groups to make more strategic use of public sector fleet purchasing. Mandatory measures, such as fuel efficiency standards, were favoured by many public and non-profit sector agents.

'The fuel efficiency of the Australian passenger vehicle fleet remains the same in 2006 as it was in 1963.'

- West Australia Department of Planning & Infrastructure

The potential of biofuel to address transport emissions was discussed widely, with many submissions highlighting concerns over issues relating to food prices and environmental degradation. Several environment groups urged that any policies to drive the uptake of biofuel need to ensure that they genuinely reduce greenhouse gasses and come from ecologically benign sources. Cost barriers faced by the land and air transport biofuel industry (including excises not faced by their fossil fuel competitors) were cited as key barriers to innovation.

8.5 Urban planning

Federal funding and strong leadership by States and Territories was called for in urban planning, infrastructure provision and public transport. A number of individuals and interested stakeholders attested that urban development has been running ahead of government regulation and planning, and a broader more strategic approach to planning must be framed to guide local government. Submissions suggested that consideration of such issues as integrated transport planning and the impact of urban planning on public health were beyond the scope of local government planning controls alone.

The public sector, environment and transport interest groups highlighted the importance of urban form and infrastructure for walking, cycling and public transport on emissions. Several key stakeholders suggested that rises in fuel costs have the potential to

disproportionately impact low-income households, because they live farthest from urban centres, with less access to public transport and employment.

Stakeholders suggested the need for urban structure to be oriented around the uptake of lower-emission modes, provision of public transport and compact urban design. The housing industry noted the importance of these issues, contested some issues around 'urban sprawl' and suggested that the community should pay for new infrastructure in greenfield development, rather than new home buyers. Despite these debates, there was widespread support for more strategic development of sustainable communities.

Glossary

CDM: Clean Development Mechanism. One of three flexibility mechanisms under Article 12 of the *Kyoto Protocol*. The CDM allows Annex I countries to meet part of their obligation to reduce emissions by undertaking approved emissions reduction projects in developing countries. Emissions reductions under the CDM can create tradable permits called certified emission reductions

Computable general equilibrium (CGE): A class of empirical economic models used to estimate economy-wide reactions to changes in policy, technology or other external factors.

ETS: Emissions Trading Scheme. An administrative approach used to reduce the cost of emissions control by providing a market-based and tradeable instrument for achieving reductions in emissions.

Individual: Private citizens and academics.

IPCC: Intergovernmental Panel on Climate Change. An intergovernmental body tasked with evaluating the risks associated with human-induced climate change.

LULUCF: Land-Use, Land-Use Change and Forestry.

Non-profit Sector: Non-government organisations that operate for the public good, rather than financial gain. These include such stakeholders as charitable organisations, independent research bodies, think tanks, interest groups and universities.

Public Sector: Local, State, Territory and Federal government organisations, including their respective departments, regulatory bodies and officers.

Private Sector: Organisations created for the purpose of market production, with profits distributed to owners.

Representative Body: A sub-sectoral classification for organisations and associations whose primary purpose is to act on behalf of a constituent membership that can be drawn from the public and private sectors. In the context of this report, this category primarily refers to industry or issue-specific associations, unions and forums.

TEEII: Trade-exposed emissions-intensive industries are Industries that are either exporters or compete against imports, and produce significant emissions (above a threshold) in their production of goods.