



**STANDING COMMITTEE ON RURAL AND REGIONAL AFFAIRS
AND TRANSPORT**

Climate Change and the Australian Agricultural Sector

Submission

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Introduction

The Cattle Council of Australia (CCA) welcomes the opportunity to provide comments to the Standing Committee on Rural and Regional Affairs and Transport on Climate Change and the Australian Agricultural Sector. CCA recognises the importance of climate change to Australia's agricultural industries and rural communities and believe that it is in the interests of both urban and rural regions to better understand and prepare for the impacts of climate change on the agricultural sector. Projections indicate that relative to other developed countries, Australia is exceptionally sensitive to climate change (Garnaut 2008) and agriculture is one of the most vulnerable sectors due to the impacts on productivity of changes in water availability, water quality, temperature, and pests and diseases. Climate change will also affect markets and international trade.

Agriculture in the Australian economy

Agriculture contributes approximately 2 per cent of Australia's gross domestic product and 18% of total exports (DAFF 2007). 61% of total agricultural production is exported. The Australian Bureau of Resource Economics (ABARE) estimates that production in key agricultural industries, including wheat, beef, sheep, meat and dairy, will fall by 8.5 to 10% by 2030 and by 13 to 19% by 2070 (ABARE, 2007). The impact on exports will be more substantial, with an estimated decline of 11 to 63% by 2030 and 15 to 79% by 2070.

The reliance of livestock industries on export markets makes them particularly vulnerable to changes in international demand and competition. Beef will be one of the commodities most adversely affected as a result of climate change with a projected decline of 6.1% by 2030 and 11% by 2050 in global production and 9.6% by 2030 and 19% by 2050 in production in Australia (ABARE 2007). The projected declines for Australian production of sheep meat are 8.5% and 14% in 2030 and 2050, respectively. These results are from simulation studies that compare projected production in the absence of mitigation or adaptation response relative to a reference case with no climate change impacts on future growth. The relatively severe and adverse impacts of climate change on production for livestock industries indicated by these simulations emphasise the need for a strong response based on robust science by government, industry and producers to the threat of climate change.

The challenges faced by the agricultural sector in adapting to climate change are substantial. Experience in managing for seasonal climate variability will facilitate response by industry and individual producers to the additional risks and opportunities of longer-term changes but strategies are needed to provide the knowledge and tools to support adaptation. CCA recognises the past and current investment by government, industry and R&D corporations and propose that in moving forward we need to build on this work to provide producers and industries with appropriate and practical tools and capacity to adapt to climate change.

Agricultural industries will have specific issues in adapting to climate change, but there are many common challenges that will benefit from a co-ordinated approach. This submission focuses on climate change and the red meat industry in identifying issues for an effective adaptation response by the agricultural sector to the challenges of climate change against the terms of reference of the Senate inquiry.

Terms of Reference

- i. the scientific evidence available on the likely future climate of Australia's key agricultural production zones, and its implications for current farm enterprises and possible future industries;
- ii. the need for a national strategy to assist Australian agricultural industries to adapt to climate change; and
- iii. the adequacy of existing drought assistance and exceptional circumstances programs to cope with long-term climatic changes.

i. The scientific evidence available on the likely future climate of Australia's key agricultural production zones, and its implications for current farm enterprises and possible future industries.

Published evidence: Development of an effective national adaptation strategy for agriculture will depend on the degree of confidence in scientific evidence on likely changes in climate at regional scales and on estimates of the impacts of those changes on different enterprises and industries. Based on potential future greenhouse gas emissions scenarios, projected increases in temperature and other climate variables at global and continental scales have been published (IPCC 2007). The scientific evidence for regionally differentiated changes in climate is strong but the capacity to downscale these results to the finer scale of Australia's agricultural production zones has yet to be developed. Hence research into the impacts of climate change for current farm enterprises or agricultural sectors and possible future land uses has relied on scenarios of possible temperature and rainfall changes.

ABARE (2007) summarises research results on projected climate change impacts on agricultural industries of assumed changes in temperature. For example, 3-4°C increase in temperature is projected to result in an increase in tick related losses in net cattle production weight of 128% (Preston and Jones, 2006), and 1-2°C increase may result in a decrease in pasture productivity of 15% and a decrease in liveweight gain in cattle of 12% if accompanied by a 20% decline in rainfall (Crimp et al., 2002).

In many cases, simulation studies have used a range of change in one variable, e.g. temperature, without considering the impacts of co-variants. The results of Cline (2007) emphasise the need for research to consider multiple variables in analysing potential future impacts on agriculture. He projected that while future potential climate changes could reduce Australia's agricultural productivity by 27% by 2080, if carbon dioxide fertilisation is factored in, the decline would be reduced to 16%.

Issues: Assessing the vulnerability of agricultural sectors to climate change is complex and currently uncertain. It relies on:

1. a capacity to develop future climate projections at appropriate spatial scales; and
2. a capacity to link the downscaled dynamic climate models (General Circulation Models) to biophysical and economic models for different agricultural sectors.

Uncertainty remains high in likely future climate impacts for agriculture due to limitations in both of these complex scientific fields. Significant global research is being undertaken to

improve capacity, data and tools, but adaptation decisions by farmers, industry and policy makers now require communication of the best current scientific understanding.

Practical example: Meat and Livestock Australia (MLA), with Dairy Australia and government and other R&D partners, is supporting a project to develop modelling tools and capability to address whole farm system questions in the grazing industries and assist farmers, advisers and research managers to make decisions that consider future climate changes. The WFSAT (Whole Farm Systems Ability & Tools for the Grazing Industries) project is undertaking analysis of ten future scenarios based on CSIRO's published 2030 and 2070 climate change scenarios, and will publish the potential impacts of climate change on seasonal pasture growth for 9 regions/locations in southern Australia in 2008. To extend the regional applications of this work, the project hopes to further develop scenarios for northern grazing enterprises using pasture growth models relevant to sub-tropical and tropical extensive rangelands and management systems.

ii. the need for a national strategy to assist Australian agricultural industries to adapt to climate change

CCA recognises the need for a national strategy to assist adaptation of Australian agricultural industries to climate change. The potential impacts of climate change will not be uniform across agricultural industries or between different regions of Australia or different parts of the world. Therefore a national strategy would need to acknowledge and understand the implications of these differences as well as promoting the benefits of a consistent approach between agricultural sectors. Impacts on local and global markets, competitiveness and changes in consumer demands as well as direct climate impacts on production are important considerations for the resilience of agricultural industries to climate change.

Existing initiatives: A national strategy would help avoid duplication of effort and maximise the benefits of investment to support climate change adaptation. Future investment in a national strategy for Agriculture should build on and not repeat existing initiatives such as the National Agriculture and Climate Change Action Plan 2006-09 (NACCAP).

NACCAP identified four key areas in reducing the risks of climate change to sustainable agriculture:

- adaptation strategies to build resilience into agricultural systems;
- mitigation strategies to reduce greenhouse gas emissions;
- research and development to enhance the agricultural sector's capacity to respond to climate change; and
- awareness and communication to inform decision making by primary producers and rural communities.

R&D strategy: In moving to a more coordinated national strategy the objectives and approach of NACCAP should be updated to reflect progress in understanding of the science of climate change and impacts on agricultural industries. The scientific basis for a national strategy will require a coordinated research strategy linking activities already underway or planned. CCA supports the approach of the Climate Change Research Strategy for Primary Industries (CCRSPI) in developing a comprehensive and co-ordinated research, development and extension program to underpin a national climate change research strategy for primary

industries. This program should form the scientific basis for national action on climate change for the agricultural sector.

Comments on additional challenges for adaptation of the livestock industries to climate change impacts and policies

Mitigation: Agriculture and land use accounted for approximately 22% of Australia's total greenhouse gas emissions in 2005 as reported in the national inventory (AGO 2007). This is down from 40% of total emissions in 1990, due mainly to phasing out of broadscale land clearing for grazing. To achieve the long-term reductions in emissions announced by the Australian Government of 60% by 2050 or the stronger reductions proposed by Professor Garnaut in his interim report (Garnaut 2007) of 90% by 2050, there will be an expectation of further reductions from the agriculture sector. MLA is supporting research into mitigation of emissions of methane from livestock and nitrous oxide and methane from animal waste, but the options are likely to take considerable time to operationalise, produce relatively small reductions, and be costly. At the same time, introduction of caps on emissions of covered sectors in an emissions trading scheme will increase input costs for agriculture that will put extra stress on the industry that warrants consideration in a national climate change strategy for the agricultural sector.

Consumer demand: The increased media focus on greenhouse implications of products, including food, is creating an expectation of environmental 'ethics' that is subject to manipulation by advocates of particular views, e.g. the anti-meat lobby. A shift away from meat-based diets towards vegetable-based diets will have important ramifications for the economic viability of livestock producers and processing industries. It will also have impacts on landscape health if more fragile lands are cropped rather than grazed, especially under irrigation. There is also good evidence that a decline in intake of the nutritional benefits of meat will have long-term implications for health.

Land use: In addition to potential changes in land use to meet consumer demand related to diet, there will also be pressure for increased plantation forestry to store carbon for greenhouse gas offsets and for crops for biofuels. The magnitude of this pressure on land use cannot be quantified until the details of an Australian Emissions Trading System are finalised. However, any re-allocation of more productive landscapes could affect ecosystem values, greenhouse gas emissions through fertilizer, irrigation and transport (increased 'food miles'), and food security and prices. Conversion of inappropriate regions from productive agriculture to plantation forestry for carbon sequestration may bring perverse ecological outcomes due to increased fire risk, changes in catchment hydrology or impacts on biodiversity conservation. CCA encourages a systems analysis approach to understand the full impacts of extensive plantation establishment in the agricultural production zones of Australia.

iii. the adequacy of existing drought assistance and exceptional circumstances programs to cope with long-term climatic changes.

Agricultural industries and particularly producers in the extensive livestock and grains sectors have a proven record in sustainable management against a background of extreme seasonal climate variability. The existing drought policy has supported farmers during seasons of exceptional circumstances.

Agriculture needs access to tax incentive/ reduced loan facilities etc. to allow for serious future building, so that through a government contribution, the dollars are leveraged to minimise agriculture's exposure to future droughts. The areas of "future building" could include fodder conservation, water reticulation, soil ameliorants, off farm investment workshops etc.

There is an immediate need for improved knowledge and tools to enable producers to build climate changes into current management strategies. Improved seasonal climate forecasts at appropriate regional scales that are based on dynamic climate models incorporating human-induced climate change as well as natural variability will form the basis of decision support tools for greater resilience. Land and Water Australia's Managing Climate Variability Program R&D priorities include the development of tools and communication strategies to help meet this need.

As a member of the National Farmers Federation (NFF), Cattle Council supports the call for a visionary new strategy in the way Australia deals with, and manages, drought. A changing climate requires a rethinking in how we plan for, and deal with, drought today and in the future. Producers require the benefits of effective drought preparedness and management measures, based on mutual obligations, to assist beef producers to prepare for, manage and recover from drought, with the intention of alleviating the impact of future severe droughts.

Conclusion

CCA supports the need for national action to better prepare the agricultural sector for future climate change and notes the following points:

- There is an immediate need for knowledge and tools to support decisions for sustainable management in a more variable and changing climate despite current uncertainty in the quantified extent of changes in climate variables and the uncertainty in understanding all implications of emerging policy.
- To be effective a national adaptation strategy for agricultural industries and national research and development programs should be flexible and responsive to changing global scientific evidence and national and international policies.

CCA in conjunction with MLA, is keen to co-operate with other agricultural sectors and R&D corporations to minimise the vulnerability and to maximise the opportunities for industries and individuals in the agricultural sector.

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Cattle Council of Australia

The Cattle Council of Australia was established in July 1979, bringing together for the first time in a single organisation all farmer organisations whose members had beef cattle enterprises. In brief, the objective of the Council is to represent and promote the interests of Australian beef cattle producers. This is achieved through wide and regular consultation with, and policy advice to, key industry organisations, relevant Federal Government Departments and other bodies regarding issues of national and international importance.

Meat & Livestock Australia

Meat & Livestock Australia (MLA) is a producer-owned company, working in partnership with industry and government to achieve a profitable and sustainable red meat and livestock industry. MLA has the unique responsibility of providing marketing and research services to its 43,500 livestock producer members and the broader red meat industry to help them meet community and consumer expectations.

Meat & Livestock Australia provides research and development and marketing services to the red meat industry. MLA invests in R&D relevant to the sheep, cattle and goat sectors of the industry, both on and off farm.