

**NSW Legislative Assembly
Standing Committee on Natural Resource Management
(Climate Change)**

**Submission
University of Technology, Sydney
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In response to the terms of reference for this inquiry, the following points are offered for consideration:

(a) The likely consequences of human-induced climate change on land (including salinity), water and other natural resources:

1. Reports by the IPCC and CSIRO address this issue in more detail than UTS is capable of in this context, so this submission is confined to some particular observations on the context and situation. It is hoped that they add to the sum of ideas under consideration, rather than simply reiterating commonly made points.
2. The interaction between the effects of climate change and general, global, anthropogenic change is critical. Climate change, a natural process that has been part of the earth's history, is happening, for the first time, in a highly modified landscape, so the potential for unexpected interactions and responses is much larger than it has been before.
3. How we account for changes in temperature and moisture – that are actually a result of climate change - on rates of decomposition, fire frequency or the fertilisation effect of CO₂ on plants will be important, so needs to be studied.
4. We can expect vigorous debate among the various stakeholders around any ambiguity in the scientific knowledge; so it will be necessary to explain the inherent uncertainties in science, coupled with the need to observe the precautionary principle.

(b) Options for ensuring ecologically sustainable natural resource use, taking into particular account the impacts of climate change:

1. There is likely to be considerable debate among scientists about the consequences of management interventions on the carbon cycle in what are now modified landscapes. For example, will late successional vegetation sequester carbon or simply turn it over in a steady state? We do not know yet, but the question should be addressed and answered before policy decisions lock in any potentially perverse or, at least, unproductive, outcomes.
2. It will be difficult to match NRM actions within individual operations to these larger scale targets unless there is transparent carbon accounting and an equal emphasis on mitigation, adaptation and a rapid transition to renewable energy sources.

3. The scientific reality is that, while we can have large scale modelling that gives us global and regional parameters and targets, there is complexity in carbon fluxes at local scales. This makes local carbon budgets hard to predict, especially when the global climate models predict only regional trends.
4. In light of emerging knowledge, rapid change and inherent uncertainties, the application of adaptive management principles to natural resource management will be needed. While protagonists may well demand certainty, an element of flexibility and nimbleness will be necessary.

(c) Approaches to land and water use management practices on farms and other natural resource management practices, having regard in particular to the role of such practices in contributing to climate change or as a tool in helping to tackle climate change:

1. There will be considerable need for scientific input into policy development. The nature of the carbon story is that natural resource management impacts on processes that result in net sinks and sources of carbon that vary in space and time. It is possible for one management action to turn a given patch of vegetation toward sequestration; only for a later action to produce emissions.
2. NRM practices that result in a net sequestration of carbon into the landscape will be good for production, conservation and environmental services. They will not, in themselves, solve the emissions problem.
3. A debate will develop around the loss of native vegetation versus the sequestering of carbon in plantations. Similarly the current approach of the Australian Greenhouse Office to limit the capacity for soil carbon, Private Native Forestry and other smaller scale carbon sequestration to be part of the trading mix will need to be addressed.
4. Clearly there is need for robust carbon accounting at the property scale.

(d) The effectiveness of management systems for ensuring that sustainability measures for the management of natural resources in New South Wales are achieved, having particular regard to climate change:

1. Mitigation and adaptation strategies will need to be widespread. It will not be enough for just the most efficient NRM practitioners or those in one particular sector to take on management change; everyone in NRM will need to make a contribution.
2. Policy that facilitates such inclusiveness is problematic but necessary.
3. As production of biofuels increases, it will be necessary to objectively assess the relative merits of cropping for food and cropping for fuels. The land areas and production rates for biofuels will have to be weighed up and compared, to avoid compromising food production by stimulating biofuel expansion. It is unlikely that allocating just waste streams from agricultural production for biofuels will be able to satisfy potential demand.

(e) The likely consequences of national and international policies on climate change on natural resource management in New South Wales:

1. In light of recent outcomes at the Bali conference, it seems likely that mandatory emissions targets will be agreed by 2009; which will place a serious onus on the Australian Government to achieve significant emission reductions in the short term.
2. There is no single measure, nor even a small basket of measures, which can be expected to achieve the likely targets, so a broad sweep of measures will be necessary, across all facets of natural resource management; mainly to cut emissions, but also to maximise natural and engineered sequestration mechanisms.
3. It seems likely that the State will have to adopt a much more prescriptive role in natural resource management and that compliance will have to become more of a social norm than it is at present.

CONCLUSIONS

1. There is a deal of uncertainty surrounding the impacts of climate change at the local level, so stakeholders need to be briefed on that ambiguity.
2. Caution is needed in developing natural resource-based interventions, since the complexity of interactions may, in practice, lead to perverse outcomes.
3. Potential climate impacts; their countervailing interventions; and possible outcomes, must all be studied carefully before broad-scale interventions are locked in.
4. In general, emissions reduction, rigorous carbon accounting and prudent land management practices must take precedence over attempts to manipulate natural systems and stimulate carbon sequestration.
5. Given the probable depth of necessary emission reductions, every feasible management intervention will be needed, based on sound carbon accounting.
6. Adaptive management must be the watchword for dealing with natural resource management in New South Wales, in view of climate change

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