

Comments on Garnaut Climate Change Review: Issues Paper 1 *Land-use – Agriculture and Forestry* Margaret Blakers, Green Institute January 2008

The Garnaut Review will recommend policies for tackling climate change and as part of the process has released an issues paper on *Agriculture and Forestry*.¹ The brief comments below should be read together with my November 2007 response to a discussion paper by the Department of Prime Minister and Cabinet on *Early Abatement* for emissions trading. Many of the same questions are raised in both papers but neither adequately considers the important contribution of native vegetation conservation and restoration in carbon sequestration, nor the value of biodiversity in sustaining a healthy biosphere.

1. The importance of land management for climate change

Land management is of central importance for climate change. It is the source of nearly 30% of Australia's greenhouse gas emissions and has very large sequestration potential which can be harnessed relatively quickly. Healthy ecosystems and biodiversity play a crucial role in storing carbon and cycling it between the ocean, atmosphere and biosphere.

Green carbon (associated with living systems) is differentiated from brown (fossil fuel) carbon by the fact that it is part of a natural system that both emits and sequesters carbon. For policy and planning purposes it is essential, as in any other form of accounting, for emissions to be reported separately from uptake (sequestration). Australia's national greenhouse gas accounts do not do this and so fail to give a clear picture of the emissions from land use, land-use change and forestry. The lack of transparency is resulting in a confused debate and poorly informed policy proposals.

Compounding this are data problems, especially for native forests. These are dense carbon stores, especially old growth and mature forests, and particularly large old trees within those forests. Empirical data on just how much carbon they store is scarce. The figures in Australia's accounts are derived from plantation measurements and are probably serious under-estimates.

In Table 2 of the attached *Early Abatement* submission, Australia's national greenhouse gas accounts are disaggregated as far as is possible for 2005. By adding data from the 'agriculture' section of the accounts (excluding animal husbandry), emissions and uptake relating to land management can be estimated (table 1). On this basis, emissions from land management totalled 150 Mt CO₂ in 2005, equivalent to nearly 30% of Australia's total net emissions (UNFCCC accounts). Importantly, this does not include emissions from clearing

¹ www.garnautreview.org.au

or carbon-degradation of non-forest vegetation such as savannas, wetlands, shrublands and native grasslands. Offsetting this, total sequestration by post-1990 plantations, native forests available for logging (15 million ha) and durable wood products was 83 Mt CO₂. Sequestration by conservation forests (147 million ha) or non-forest native vegetation such as the very large areas of degraded pastoral land is not included.²

Time is an important factor not reflected in the accounting system. Globally, the imperative is to for emissions to peak within 10 years and then reduce. Emissions in the near future are potentially more damaging than deferred emissions and future sequestration does not compensate for emissions now. It is therefore a priority to protect the stores of carbon in existing native vegetation, especially old growth and mature forests, because it takes decades or centuries for all the emitted carbon to be recaptured.

Land management clearly offers large opportunities for ameliorating climate change. By limiting consideration to agriculture and forestry, and excluding conservation and restoration, the *Issues Paper* presents an artificially narrow range of options and misses critical issues.

2. Scope of an emissions trading scheme

If emissions from agriculture and forestry are excluded from the emissions trading scheme but sinks and offsets are included, there is considerable potential for perverse outcomes including making the scheme less effective for brown carbon, achieving lower overall levels of abatement than anticipated, accelerating the loss of biodiversity and over-committing water in a drying climate. The *Early Abatement* paper spells out the mechanisms driving these potential problems.

The basic principle for emissions trading should be ‘no credits without debits’ – agriculture and forestry activities should either be all in or all out. If they are in the scheme, emissions from native vegetation clearing should be debited against agriculture even though they appear in the land-use section of the greenhouse gas accounts.³ Carbon-degradation from logging should be debited to forestry. (See also section 3 below).

Biofuels including wood are contentious and their carbon balance may be negative in many circumstances.⁴ Their total carbon balance should be clearly established from empirical studies before land is committed to this use. Fuel combustion emission factors should be directly comparable with fossil fuels, not omit CO₂ emissions as is currently recommended for wood, wood waste and biomass (see section 4.5 of the *Early Abatement* paper).

² The IPCC methodology is intended to account for all ‘human-induced’ emissions and uptake, including land managed for commercial, conservation or cultural purposes. Inexplicably, Australia’s accounts are limited to land managed for commercial purposes.

³ In Tasmania, private native forests can be cleared for plantations until 2015 so it would be debateable as to how the emissions should be partitioned between agriculture and forestry if only one of these activities is included in the emission trading scheme.

⁴ See for example Righelato, R and Spracklen, D V, 2007, *Carbon mitigation by biofuels or by saving and restoring forests?* *Science* 317:902; Doornbosch, Richard and Steenblik, Ronald, 2007 *Biofuels: is the cure worse than the disease?* OECD Round Table on Sustainable Development,

Conservation and restoration as a general rule are carbon-positive. If offsets are available, they should be limited to these activities, contingent on a legally binding commitment to permanently manage the land for carbon storage, biodiversity and water.

3. Alternatives to emissions trading

It should be possible to reduce substantially land-based emissions while increasing sequestration in vegetation and soils. However, emissions trading may not be an effective mechanism. Living systems are complex, multi-scaled and inter-dependent. Water markets are problematical for the environment. Adding a carbon market increases the complexity because water is a limiting factor for plant growth and therefore carbon sequestration. Biodiversity, which provides the ecosystem services upon which both carbon sequestration and water cycling ultimately depend, is completely overlooked in current discussions.

Australia's two biggest single sources of land-based emissions are clearing and native forest logging. Both are amenable to regulatory control accompanied by appropriate transition or compensation packages. This would be a far simpler approach than emissions trading. Australia's agriculture and forestry industries would then, like New Zealand's, depend on already cleared land and tree farms (plantations). Emissions trading schemes in the two countries could be harmonised, incorporating agriculture and forestry on a common basis.

Independently of whether forestry is included in the emissions trading scheme, problems with 'forest sinks' and offsets need to be tackled. At present, plantation establishment is heavily subsidised through the tax system (Managed Investment Schemes), unlike competing land uses. If *Greenhouse Friendly* criteria are adopted, additional subsidies through carbon credits would be available. Apart from distortions to wood markets, the requirement that forest sinks be 'permanent' and the ability to obtain credits for a pool of plantations means that large areas of land may be locked into rapidly growing high water-use crops for decades to come. In a drying climate that would be unsustainable. The subsidised competition for land and water also has implications for food production.

For real sustainability, investment in biosequestration through conservation is far preferable. Past land management has left large areas of forests, pastoral lands and other native vegetation well below their potential carbon carrying capacity. A gauge of the sequestration potential can be established from existing work such as by the ANU in the forests of south-eastern Australia.⁵

Recommendation. The Review should commission a comprehensive evaluation of carbon storage, greenhouse gas emissions and sequestration potential in native forests, other native vegetation and other land uses as a pre-requisite to designing land-management policies for tackling the climate crisis.

⁵ Prof Brendan Mackey and researchers at the Fenner School of Environment and Society, ANU, are preparing a series of reports on the role of natural ecosystems in carbon storage.

Table 1. CO₂ emissions and uptake from land management. Data from Table 2 of the attached paper on *Early Abatement* and the 2005 national greenhouse gas accounts (UNFCCC framework).

(a) Emissions. Excludes emissions from clearing or other carbon-degradation of non-forest native vegetation except for savanna burning.

Clearing of forests	57 Mt CO ₂	This is a net figure where emissions from forest clearing are partially offset by the CO ₂ uptake of vegetation regrowing on previously cleared land
Native forest logging	38 Mt CO ₂	Estimated total emissions including logs, other above ground living biomass, litter, roots and soil carbon. The default IPCC recommendation is for all logging emissions to be accounted for at the time of logging. In Australia's accounts, emissions are partitioned into several components and the CO ₂ content of wood exports (primarily native forest woodchips) is omitted.
Pre-1990 plantations	19 Mt CO ₂	Includes 2 Mt CO ₂ net on-site emissions and up to 17 Mt CO ₂ in logs; a minor portion of the log volume may be double-counted as fuelwood consumption and storage in durable wood products
Burning	1 Mt CO ₂	This includes wildfire and prescribed burns; since 1990 maximum emissions were 5 Mt CO ₂
Fuelwood consumption	10 Mt CO ₂	Fuelwood consumption is estimated separately from logs to be processed but there may be some element of double-counting
Agricultural land management	26 Mt CO ₂	Includes rice cultivation, agricultural soils, prescribed burning of savannas, field burning of residues (presumably these are all net figures). Excludes animal husbandry.
TOTAL	151 Mt CO₂	

(b) Uptake. Excludes CO₂ uptake by conservation forests (approximately 147 million ha) or by non-forest native vegetation.

Post-1990 plantations	-21 Mt CO ₂	This represents the growth of about 800 000 ha of tax-driven new plantations which have not yet been logged (rotation length approx 15 years for the majority). When logging begins, emissions will substantially reduce net uptake.
'Managed' native forests	-57 Mt CO ₂	An 'estimate' of CO ₂ uptake by 15 million ha of native forests available for logging. Note that this figure has remained unchanged in the accounts since 1990. It is not based on empirical data.
Durable wood products	-5 Mt CO ₂	Includes all domestically processed wood, locally-grown plus imports
TOTAL	-83 Mt CO₂	