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Can the carbon market help regional biodiversity?

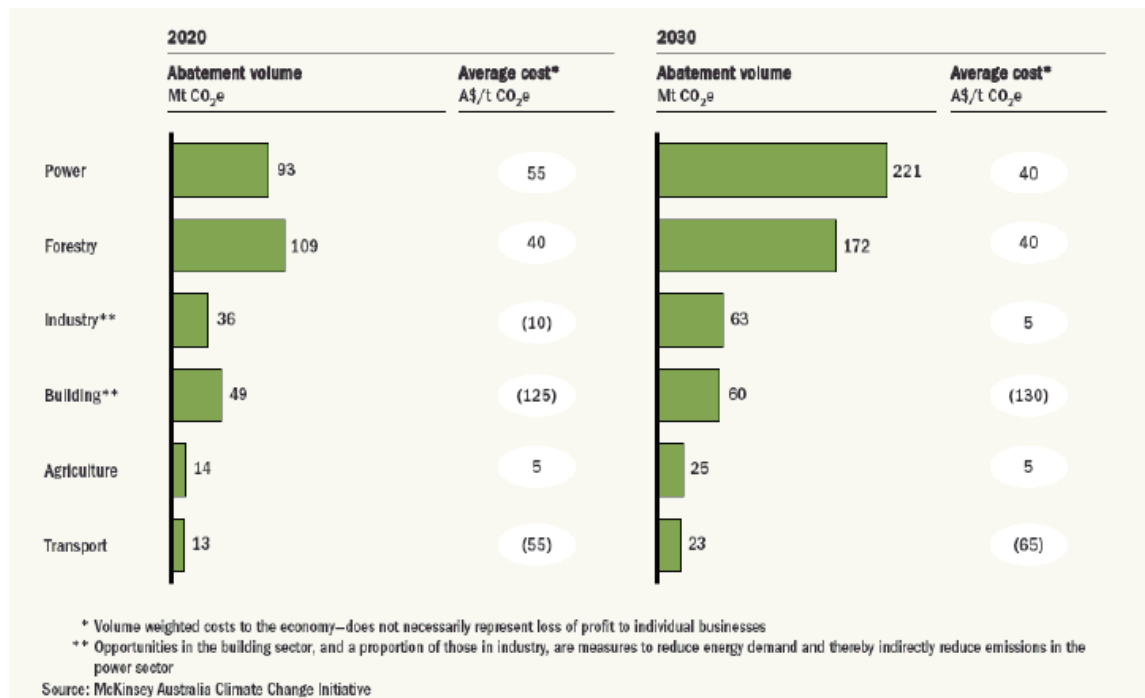
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Forestry has major potential for carbon abatement in Australia

The proposed national emissions trading scheme (ETS) in 2010 will provide additional financial incentives for reducing carbon emissions through energy conservation and carbon sequestration.

The forestry sector has more carbon abatement potential up to 2020 than any other sector – power, industry, building agriculture or transport (McKinsey 2008) (Figure 1). However, it is not low hanging fruit, because other abatement options are considerably cheaper – particularly building and transport which both provide positive returns on investment. Forestry abatement potential increases beyond 2020, although clean coal is projected to would become the largest abatement option by 2030.

Figure 1 Emissions reduction opportunities and cost by sector, 2020 and 2030



Garnaut (2008) produced potential abatement estimates of similar scale (Table 1) demonstrating that the rural abatement potential far outweighed the current emissions from agriculture (90 Mt CO₂/a) and land use change (50 Mt CO₂/a). Current abatement from post 1990 re-vegetation is a modest 23 Mt CO₂/a. The forestry abatement estimates are ambitious, assuming an increase from the current plantation area of 2m ha to 9.1m ha (Polglase et al, 2008). Even so, this is well

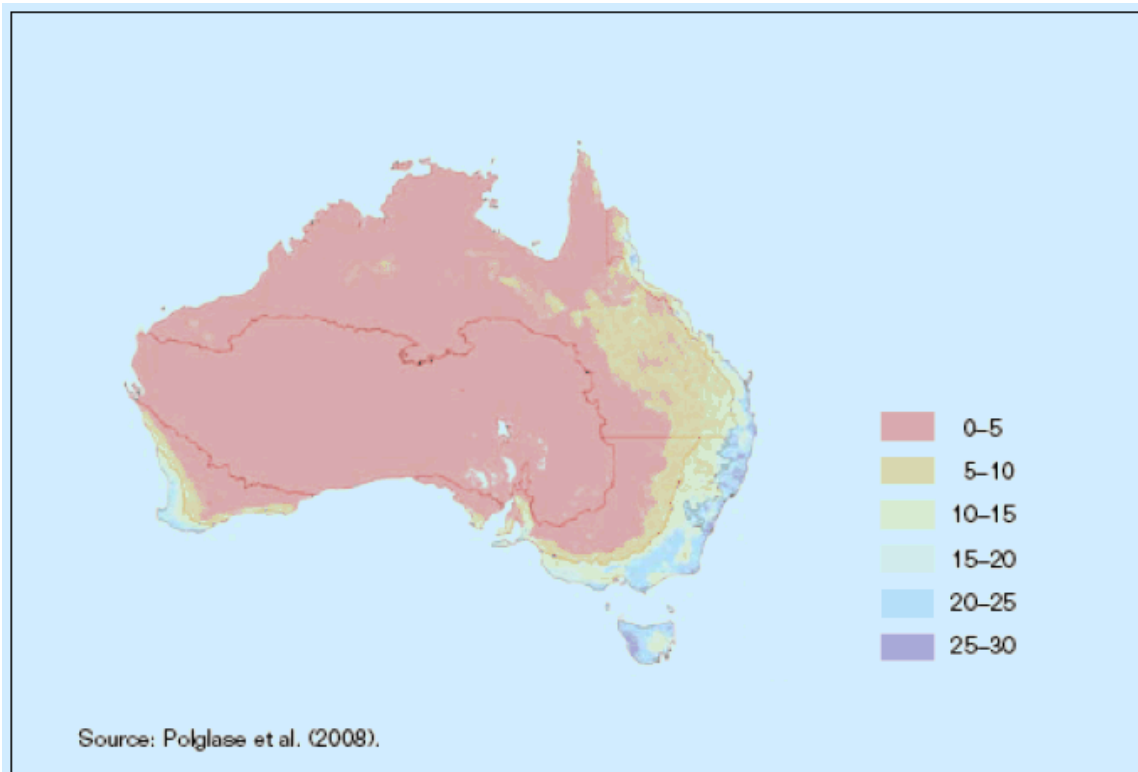
within the 200m ha of potential forestry land (Figure 2). Most of Australia has low biosequestration rates, and the highest rate areas are already agricultural or closely settled (Polglase et al, 2008). Clearly land use change on this scale would cause major changes to rural production and social systems, but the potential is there.

Table 1 Abatement potential from land management and biomass production

VEGETATION RELATED ABATEMENT	ABATEMENT POTENTIAL (Mt CO ₂ -e/a)	DURATION (years)
Rehabilitation of degraded Mulga	250	40-60
Pre 1990 Forests	136	100
Carbon Farming	143	20
Land Clearing	63	Ongoing
Post 1990 Forests	50	Ongoing

Adapted from Garnaut (2008)

Figure 2 Carbon removal potential for Environmental plantings (tCO₂-e /ha/a)



In Garnaut's (2008) view, the potential for forestry abatement would not only inject funds into the rural sector but could have significance on a world scale:

'There is considerable potential for biosequestration in rural Australia... [that] ...would greatly reduce the costs of mitigation in Australia. It would favourably transform the economic prospects of large parts of remote rural Australia'; and

'Full utilisation of biosequestration could play a significant role in the global mitigation effort. This is an area where Australia has much to contribute to the international system'.

Carbon pricing will only accelerate revegetation if the incentives are sufficient

Carbon markets have the potential to support major revegetation programs in Australia. At the moment, revegetation projects for carbon sequestration are sporadic. Motivation is not directly financial – plantings are driven by voluntary carbon schemes which currently attract relatively low prices. With a higher carbon price, some schemes will provide a competitive return.

The Carbon Pollution Reduction Scheme Green Paper includes a case study using \$20/t CO₂-equivalent. This price is within the range of current market prices in voluntary schemes in Australia and Europe. It is relatively low compared to the current global carbon damage cost of approximately \$50/t and the break even point for a number of abatement technologies (e.g. \$40/t for revegetation).

Curiously, despite the potential for forestry to abate greenhouse gas emissions, particularly in the short term – the green paper provides no specific incentives for forestry, instead preferring to leave it to market forces. Yet there are significant market interventions (taxation, subsidies, research funding, mandated targets) that favour other forms of carbon abatement, including 'clean' coal and renewables.

The low carbon price is compounded by several administrative constraints in voluntary abatement schemes. The Green Paper proposes a number of reforms that will assist, including:

- No *permanence* obligations, e.g. 100 year rule under NSW scheme;
- No *additionally* obligations (e.g. credits foregone because of a legal obligation or a pre-existing voluntary intent);
- Less stringent monitoring of forestry (default to NCAS) will lower compliance costs, *but may underestimate credits*; and
- Scheme obligations may be relaxed for extraordinary circumstances (e.g. bushfire) where medium term recovery is likely.

These are to be supported, but they are unlikely to provide sufficient incentive for substantial investment, particularly when transaction costs (planning, certification, monitoring) are included.

Confusion over the future of voluntary carbon schemes adds to landholder uncertainty. Voluntary schemes will probably remain as an alternative for carbon crediting outside the ETS (i.e. 'uncovered'). Uncovered items will still be subject to demand (e.g. agriculture, embodied energy, avoided clearing) for voluntary credits. The Federal government is applying pressure to phase out existing/proposed state schemes in favour of new national standards for voluntary credits.

The situation is not helped by the possible exclusion of pre 2010 credits from the ETS (e.g. forests with carbon stored between 1990 & 2010), which is a temporary disincentive to commencing revegetation projects.

Biodiversity is not favoured by the ETS

Plantations generally sequester more carbon than biodiverse ('conservation') plantings as a result of the intensive management practices and the species selected. From a carbon perspective alone, plantations are more cost effective than conservation forests. Despite the fact that timber harvesting is outside the Kyoto protocol, the current tax arrangements favour timber plantations over carbon production – although this anomaly is under review.

If the carbon price climbs sufficiently, then sequestration by trees will become a more profitable venture and maximizing that profit will favour plantation forestry over biodiversity plantings. Landowners will have many more vegetation choices (Garnaut 2008):

'Choices for landowners will include production of conventional commodities, soil carbon, bioenergy, second-generation biofuels, wood or carbon plantations, and conservation forests'.

'There will be significant financial opportunities for landholders who intend to maintain permanent forest cover. However, participation in the carbon market will also carry risks.. [because] .. credits generated as a growing forest ...will need to be surrendered when the forest is harvested'.

Market signals alone – particularly with imperfect information available to landowners and uncertainty about risks and returns – may deliver new plantations, but there is no reason to expect that these will be for conservation or biodiversity purposes.

Biodiversity incentives are needed

'It is important to avoid perverse outcomes for ecosystems in the implementation of policy in related areas, such as agriculture [and] forestry...The incentives for plantation forestry introduced by an emissions trading scheme must sit alongside adequate valuation of native vegetation'

(Garnaut, 2008)

'Adequate valuation' raises two issues – the types of conserved vegetation that have monetary value and the extent to which that value is a fair reflection of ecosystem services.

Established or growing conservation forests can deliver direct financial return as offsets for clearing in other places and through stewardship payments for replanting or protecting native vegetation. Conservation incentives vary widely amongst Australian jurisdictions. Examples are:

- Australia (Caring for our Country) – biodiversity and significant/critical habitats
- NSW (Biobanking) – rare species and vegetation types
- Victoria (Bushbroker) – native vegetation
- Queensland (Eco Invest) – marine plants; rare/threatened vegetation; koala habitat

The success of these schemes is patchy and the lack of uniformity across states is a barrier to adoption. They operate independently of carbon trading schemes and have quite different systems of monitoring and accreditation. Most schemes cover either new plantings or protection of existing forest, but not both. There is an emphasis on rarity in most, but not all schemes.

For landholders, financial returns from the stewardship schemes are roughly comparable with income from Carbon credits. Information is patchy, but typical gross returns are in the range of \$10-20/ha/a.

Substantially higher returns are reportedly being paid for biodiversity offsets for urban developments – perhaps two orders of magnitude higher. However, these are specific to particular vegetation types and are limited in scale. Predicting market demand for biodiversity offsets is complex and is dependant on state/territory regulatory environments. These offsets are generally mature forest with lower carbon abatement potential than new plantings.

Ecosystem services values are similarly high priced. For example, Queensland prices mangrove offsets at \$16,000/ha/a based on an estimate of their ecosystem services (fisheries, shoreline stabilisation etc). Although development offsets are special cases, there is a persuasive case that landholders are probably being underpaid by a considerable margin for the true ecosystem services of their conservation areas. Were these services to be routinely taken into account in

payment schedules, conservation forestry could offer a much higher commercial return than carbon credits.

Economic efficiency is an important principle to ensure that resources achieve their potential. Market based mechanisms may theoretically offer the highest efficiency, but mechanisms for increasing biodiversity in rural settings are rarely market led. In most cases they are government funded, with high reliance on volunteer resources from landholders and other stakeholders. Although 'market based' approaches have led to successful conservation management, there is still a question mark as to whether they are fundamentally efficient. For example:

- they inevitably involve trade-offs between protection and enhancement;
- they may hide true costs because some landholders may be willing to subsidise; and
- the market is restricted to landholders.

This is not to disparage Market Based Investments in any way – simply to point out that the word 'market' does not confer a magical efficiency to costs.

An obvious step is to link biodiversity with carbon offsets to increase the incentives and place a higher value on biodiversity. Victoria has initiated Carbon Tender, which encourages natural species mixes, and complements the existing suite of conservation incentives.

How can Regional Bodies Support both Carbon and Biodiversity?

Regional bodies (non-government natural resource and catchment management organizations) already play a role in land use and conservation, but there is room for increasing their importance in the sector. Table 2 identifies three key constraints/opportunities in the revegetation arena that could be addressed by regional bodies (and in some locations, this is already happening to a degree). This includes practical advice on costs and benefits, articulating regional biodiversity goals and continuing to support regional economies and communities.

Table 2 Potential roles for Regional bodies

CONSTRAINT OR OPPORTUNITY	INSTITUTIONAL BARRIERS	STAKEHOLDER REQUIREMENTS	POTENTIAL ROLE OF REGIONAL BODY
<i>Landholder knowledge about potential costs and benefits</i>	Federal and state agencies information may be too generic	Specific, targeted information for landholders	Knowledge exchange with emphasis on local conditions
<i>Unclear objectives about regional biodiversity</i>	Regional governance is informal and not consistent across regions	Inclusive processes to define objectives; Specific objectives that readily translate to on-ground actions	Developing a consensus on regional biodiversity goals; Mapping the outcomes at local scale
<i>Increased support for regional economies</i>	Multiple funding sources lead to sporadic and unreliable incomes	Long term, stable income with known costs and benefits	Attracting investors and linking them with landholders

Achieving regional biodiversity goals inevitably needs landholder and other stakeholder support to implement the strategies and on-ground actions. The adoption of facile goals that are either vague or inadequate – simply to achieve an agreement - is ultimately ineffective. In coming to agreement on goals, regional bodies can and do seek scientific appraisal of the existing resources and reliable predictions of the benefits of improved management and conservation – including ecosystem services.

Supporting the economy and financial viability of local communities means finding ways to provide additional income from conservation activities. Commonwealth and state funding is obviously a key way and amounts to a cross subsidy from other parts of the economy – including taxpayers. There is nothing wrong with this, but it is not a reliable source of funding and the continuation of government programs is at the whim of the government of the day. As noted earlier, volunteer resources is also a method of choice, but in effect is also a cross subsidy and, in the case of landholders, may even reduce incomes. The goal should be to create a funding system in which conservation activities pay for themselves and in the process, attract new funding to a region.

Some actions to ensure that Carbon Trading is a friend to biodiversity

Revegetation to sequester carbon is relatively expensive, but is also relatively easy to implement. Technologies such as clean coal and some renewable sources are in their infancy and are not expected to deliver large abatement tonnages before at least 2020. The carbon market will always favour cheaper abatement methods and it is possible that in the longer term, the risks and costs associated with revegetation will see it fall from favour as a method for sequestration.

At present, our market favours monocultural plantations and without further intervention, they could become the forestry carbon credit of choice. To help ensure that biodiversity is considered, there are several suggested actions, including:

- Protect existing vegetation against perverse outcomes of the ETS (e.g. clearing for plantations);
- Devise a nationally consistent scheme for biodiversity credits;
- Provide biodiversity credits for both full and supplementary revegetation;
- Provide incentives to accelerate planting over the next decade;
- Provide funding for long term management where credits are insufficient;
- Revise the taxation arrangements to at least equity with plantation forestry;
- Endorse and accredit voluntary carbon schemes; and
- Provide reliable and specific information to landholders.

It is important that federal and state governments introduce systematic and consistent approaches to support revegetation for biodiversity and that these are additive to incentives for carbon sequestration. A window of opportunity for carbon is opening, but it may not be there for

very long. In that time, we could make a huge and lasting contribution to Australia's natural landscapes.

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