



Critique of ABARE Carbon Sink Reforestation Modeling

ABARE was commissioned by the Commonwealth Treasury to estimate the potential increase in reforestation activity on agricultural land under several hypothetical scenarios. The outcomes of this work were published in a report titled “*Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths*”. The outcomes were used as an input to the broader Treasury modeling of the potential economic impacts of climate change mitigation – “*Australia’s low pollution future – the economics of climate change mitigation*”.

The following questions and answers illustrate some major shortcomings with the ABARE modeling which in turn could have substantial impacts on the conclusions of the wider Treasury modeling.

What are the key conclusions of the ABARE modeling?

Large areas of agricultural land will be reforested as a result of a carbon price incentive created by the introduction of the Carbon Pollution Reduction Scheme (CPRS). This incentive will strengthen as the carbon price rises. The majority of these plantings will be “environmental plantings” not commercial timber plantations and will not be used for the production of wood and paper products.

Area of reforestation predicted for Australia in the period 2007 – 2050 under various scenarios ('000 hectares)

	Reference Case	CPRS -5	CPRS -15	Garnaut 10	Garnaut 25
Timber Plantations	610	3,047	4,514	3,562	5,028
Environmental Plantings	0	2,740	21,812	4,362	34,033
Total	610	5,787	26,326	7,924	39,061

The land that will be planted must be capable of supporting forest vegetation (though not necessarily at the growth rates required in a commercial timber plantation) and the land that will be afforested first will be land on which other agricultural production is most marginal. This is likely to be extensive grazing land and to a lesser extent marginal cropping land.

Are the assumptions used in the modeling realistic?

There are a number of key assumptions on which the ABARE modeling is based. The assumptions are so fundamental that they are likely to have a greater impact on the results of the modeling than any other part of the modeling process. Some of these assumptions are illogical and others seem highly unlikely. Some of the key assumptions and A3P's views on them are provided below.

Assumption 1: "The volume of carbon credits that may be claimed by the forest owner is assumed to be 100 per cent of the total carbon sequestered in the roots, trunks and branches of the forest planting."

The rules for the participation of reforestation in the CPRS will require security for permits based on forest carbon sequestration. This is likely to include limiting permits issued to a percentage of measured carbon in order to avoid risk. It is almost certain that below-ground carbon sequestration (i.e. root mass) will be excluded from the scheme (estimated to be 25% of the above-ground carbon), indicating a large potential variation in the modelled estimate of sequestered carbon volume.

This assumption also ignores the transaction costs that are likely to be associated with claiming credits from carbon stored via reforestation. For example, costs of running carbon pooling schemes would reduce the return to plantation owners.

Assumption 2: "All land use change decisions are assumed to be determined by comparing the net present value of returns from afforestation activities to agriculture. The returns from the carbon prices are assumed to be received by the landholder on an annual basis. However, no assumptions have been made as to when the returns from agriculture are received by the landholder. Hence, difference in cash flow between the returns to agriculture and forestry are assumed to not affect land use change behaviour".

By restricting the analysis to just comparing NPV, other influential factors that will shape landholders' decisions have been ignored. These other factors include landholder knowledge, expertise, preferences, access to capital, perspective on risks and other regulatory constraints on land use. Some attempt should have been made to quantify, estimate or provide for these factors to avoid a totally misleading conclusion. These other factors have proven to be influential in past landuse allocation and will continue to be important in the future.

Assumption 3: "... there are no ongoing management costs [for environmental plantings]."

This assumption suggests either a serious misunderstanding of the realities of land management or a deliberate decision to misrepresent and to promote unsustainable land management options. There will be an ongoing land management cost even if there is no production of physical goods from the land concerned. At a minimum, fire and pest management are a legal responsibility of all landholders. Once environmental plantings reach maximum carbon sequestration potential they yield no further income, however the liability on the land is permanent (i.e. not 50 years as assumed in the report). This will have a

negative impact on land value and will act as a considerable disincentive, especially for private landowners whose business is dependent on the underlying value of the land.

Assumption 4: “It is also assumed that timber processing industries have the necessary capacity to accommodate any increase in timber production from the forestry sector between 2007 and 2100. However, the feasibility of the timber processing industry to accommodate such an increase is not assessed in this analysis.”

A change in the extent of commercial timber plantations of the scale suggested in the analysis could not occur without fundamental changes in the markets for wood and paper products. This would have to involve a major increase in export of these products from Australia as domestic production would substantially exceed forecasted domestic demand. The commercial nature of, returns from, and fluctuations in, such exports would determine the commercial viability of such an outcome.

What are the implications if the assumptions are correct and the reforestation outcomes eventuate as predicted by ABARE?

Large areas of land will be transferred from the current agricultural production to a passive use that does not generate any physical product under environmental plantings. Once maximum carbon storage is achieved, no further income or benefit can be derived from the land but the carbon liability will exist in perpetuity unless it is paid out. However, no financial provision will have been made for the cost of ongoing management.

This change in land use may be considered appropriate and sustainable by some. However, there is no doubt that it will have substantial socio-economic implications for the land-holders and communities involved. These should not be underestimated or glossed over.

Although the area predicted to be afforested with commercial timber plantation is a small proportion of the total involved, it is still very large when compared to the current commercial timber plantation area of 1.9 million hectares which has taken many decades to establish. The large expansion of commercial plantations predicted will present major challenges for the wood products industry in terms of logistics of plantation expansion, management of, and changes to existing wood processing and marketing. The ability to manage these changes will be a significant factor determining whether or not the predictions are ultimately realized.

As reforestation will replace agricultural production on large areas of land, a further major implication would be a decline in production in the farm sector. The Government would need to be willing to support this outcome and all its consequences. The Treasury modeling does anticipate declines in some agricultural production though the extent to which this is due to the incentive for reforestation as opposed to the impact of a carbon cost on emissions in the agriculture sector has not been assessed for the purposes of this document.

What are the implications if the reforestation outcomes predicted by ABARE do not eventuate?

The predicted large volumes of relatively low cost carbon abatement will not be available, which will in turn increase the permit price and make the achievement of Australia's emissions reduction target more onerous than predictions in the Treasury modeling suggest.

It is difficult to quantify the impact a higher permit price would have, but it would likely result in economic decline leading to higher unemployment, especially in rural and regional Australia. Such an outcome may "even out" over time (i.e. up to 2050) as suggested by the Treasury modelling, but the associated near-term impacts should not be overlooked or underestimated.

The plantation timber industry is hopeful that the introduction of the CPRS will lead to some increase in plantation expansion as a result of the optional inclusion of reforestation. In the absence of a carbon price, it is likely that establishment rates of new plantations would continue at current levels at best, and may decline as more re-investment is required in second and subsequent rotation plantations.

A carbon price may boost establishment rates at the margin but the change would be minimal - in the order of tens of thousands, rather than hundreds of thousands, of hectares per annum. The detailed design rules will be crucial in determining the magnitude of the response, as well as the durability of the carbon store in existing plantations. If the rules do not create an attractive investment environment it is questionable whether many private investors would consider the risk-based return sufficient to justify opting into the scheme, in which case reforestation would not produce the scale of real, cost-effective abatement that it is capable of.

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