Climate change policy distortions in the wood and food market

Judith Ajani
The Australian National University
Fenner School of Environment and Society
judith.ajani@anu.edu.au

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Abstract

The widespread shift of Australia's wood products industry away from native forests to an agricultural regime–wood plantations–has enhanced forestry industry competitiveness. Wood now competes against food for agricultural land, water and other resources (including government support). New plantings have increased substantially since the mid 1990s via plantation managed investment schemes (MIS), arousing protest in the traditional agricultural sector and claims of unfair government policy treatment. This claim is investigated in an analysis that integrates the taxation treatment of plantation MIS with economics and forestry industry knowledge. Three methods are developed, and applied, to estimate the plantation MIS tax-based subsidy. Preliminary estimates indicate a tax-based subsidy to forestry through plantation MIS of between $0.9-1.2 billion over the five years ending 2008. The estimated subsidy is then incorporated in the Productivity Commission's calculations of the effective rate of assistance (ERA) to industry groups from tariff, budget outlay and tax-based government policy. The ERA to Forestry & logging in 2008 was estimated to be 41.8 per cent: government assistance is equivalent to 42 per cent of Forestry & logging's unassisted value added. The estimated plantation MIS tax based subsidy accounted for 77 per cent of the assistance. Assistance to Forestry & logging exceeds substantially the assistance (including drought related payments) to food growers: 7.2 per cent to Grain, sheep & beef and 17.3 per cent to Dairy cattle farming (a significant proportion was assistance that ceased in April 2008). A detailed examination of Australia's proposed climate change policy concerning the land use sector indicates that agricultural resource use distortions created through plantation MIS arrangements are lightly to intensify.

1. Introduction

The debate over agricultural managed investment schemes (MIS) and plantation MIS in particular has attracted high media coverage, four parliamentary inquiries and a Treasury review. While the Government worked to close non-plantation agricultural MIS, plantation MIS remain immune. The debate about whether plantation MIS distort resource use, particularly in agricultural land and water markets, is bogged in tax law and its implementation. Advancing the debate requires integrating tax aspects with economics and forestry industry knowledge to clarify the nature of the subsidy and develop methodologies to estimate the size of the subsidy.

In a paper presented on Australian Taxation Office (ATO) web pages, the former plantation MIS lobby group, Treefarm Investment Managers Australia (TIMA), argued that plantation MIS do not receive special tax incentives. They operate under the same basic tax regime as other agricultural enterprises (Cummine 2004). The paper concludes that, because plantation MIS investors do not receive special tax incentives, there are no tax-based subsidies.

This conclusion is understandable if we leave to one side the detail of tax law implementation and economic efficiency as distinct from tax interests. Amendments to the *Income Tax Assessment Act* (ITAA) to address potential tax evasion through plantation MIS investment have generated today's situation where the outstanding issue, from a tax perspective, is the potential for plantation MIS investors to minimise

their tax (not an illegal act) by deferring tax liabilities until income is received (for forestry, a decade or more into the future) which may be when the investor's income falls into a lower tax bracket. If this aspect of tax minimisation is significant in the decision to invest in plantation MIS, the matter should be placed in a wider taxation context. Progressive tax systems have the potential to impose a higher average rate of tax for a taxpayer whose income fluctuates significantly between years as compared to a taxpayer with the same average income received at a constant rate per annum, such as some agricultural producers and artists (Lacey and Watson 2004). Agricultural producers and artists have special tax treatments to address this situation (e.g. tax averaging and income equalisation deposits). Lacey and Watson (2004) argue that the Government take a wider view of the role for 'taxation products' to enable taxpayers to smooth taxable income, thereby increasing competition with MIS in the market for tax deferral. Plantation MIS could be viewed as a complicated, high cost and inefficient de facto 'taxation product' to address period inequity.

We now bring economic efficiency interests into the debate. The plantation MIS 'taxation product' flows into the economy as a potential distortion in agricultural land and water use. The Parliamentary Joint Committee on Corporations and Financial Services *Inquiry into Aspects of Agribusiness Managed Investment Schemes* explained how:

> *'…, there is currently potential for MIS to use unprofitable high cost structures to provide greater tax deductibility to investors, while directing a proportion of this tax-related investment to related entities charging above commercial rates for project services. While investor focus is on minimising tax, rather than investing in the most profitable venture, this directs capital away from profitable uses and disadvantages traditional farming enterprises by increasing natural resource costs and encouraging oversupply*.'
> (Parliamentary Joint Committee on Corporations and Financial Services 2009 pp. 45-6).

The aim of this paper is to integrate tax issues with economics and forestry industry knowledge to establish whether plantation MIS embody a tax-based subsidy and to clarify the effect of plantation MIS tax arrangements on resource allocation (mainly agricultural land and water) between food and wood growing. Three methods of estimating the plantation MIS subsidy to wood growing are presented and tested empirically. The estimates are then integrated with the Productivity Commission's effective rate of assistance (ERA) measures to gauge the potential for plantation MIS tax arrangements to distort agricultural land and water use, away from food to wood growing. The discussion applies this analysis to examine the potential for amplified inefficiency in agricultural resource use with the government's proposed emissions trading system and related climate change policy measures for forestry. Recommendations conclude the paper.

2. Plantation MIS

2.1 Background

Investors (growers) in plantation MIS pay fees to a plantation MIS Responsible Entity to have trees planted and receive a share of the harvest revenue after specified costs

have been deducted. Investors do not purchase capital items, notably land, thus enabling their expenditure to be fully tax deductible. (The Responsible Entity acquires land–through freehold purchase or leasing through a third party–which is sub-leased to investors.) Investors can offset their expenditure against taxable income received from other activities. Borrowing money (the interest being a tax deductible cost) to purchase the MIS investment enables investors to claim a tax deduction greater than the amount they invest personally.

Plantation MIS are focussed heavily to growing hardwoods for the woodchip market with Responsible Entities offering varying cost-structured products. Table 1 presents an indication of the spread.

Table 1 Eucalypt chip log plantation MIS costs

	WA Blue Gum Project 2009 (Product Ruling 2009/35)	Great Southern Plantations 2007 Project (Product Ruling 2007/27)	Gunns Plantation Woodlot Project 2009 - Option 1 (Product Ruling 2208/66)
Establishment fee ($/ha)	5 500	10 000	7 480
On-going costs ($/ha/yr)	600 for tending & land rent, indexed		
Other costs	▪ 15% fee when chip sales revenue exceeds $17 050 indexed. ▪ Unforseen expenses for fertiliser or insect control. ▪ Fire insurance. ▪ Fee on credit card payments of fees.	▪ Management fee of 3.3% of net proceeds from chip sales (revenue less costs of logging, cartage shipping & sales costs). ▪ Rent/lease fee of 2.75% of net proceeds from chip sales. ▪ Insurance premiums.	▪ Management fee 8.8% of net wood sale proceeds. ▪ Rent - 5.5% of net wood sale proceeds. ▪ Sales commission - 2.2% of net wood sale proceeds.
Rotation length	Clearfell at approx. 10 years	Clearfell at approx. 10 years	Clearfell at year 13 & thinning at year 9
Assumed wood yield (m^3/ha)	340	250	322
Assumed woodchip price ($fob/bdt)	not reported	$181	$207.40

Source: ATO 2009b, c and d; GPL 2009; Great Southern Plantations 2007; WA Blue Gum Ltd. 2009.

In 2009, the Australian Securities and Investment Commission (ASIC) reported 198 registered plantation MIS, accounting for slightly over half of all agribusiness MIS (ASIC 2009 p. 47). The accountancy/financial services sector established most of the early plantation MIS companies, not companies engaged directly in wood growing. It is incorrect, however, to consider that the plantation MIS tax arrangement is assistance to just the specific plantation MIS companies and associated investors and not the wood growing industry. With the Government retaining the plantation MIS tax arrangements, despite the persistent public debate and numerous Parliamentary inquiries that it could have used to end the arrangements, wood growing companies (in a traditional industry sense) started establishing subsidiary plantation MIS companies and wood processing companies became potential wood buyers linked to specific MIS. The strength of forestry industry support for plantation MIS is clear in

the united and forcefully argued calls to retain the tax arrangements by all the national forestry lobby groups in their submissions to the Parliamentary inquiries. Plantation MIS accounted for 34 per cent of Australia's plantation estate in 2008 (Gavran and Parsons 2009).

Of the three projects presented in Table 1, the Great Southern Plantations 2007 Project is the best suited for examining whether plantation MIS are unprofitable high cost structures providing greater tax deductibility to investors and distorting agricultural resource use. The Great Southern Plantations product required most of the investor's money paid as a pre-determined establishment fee, meaning relatively less is paid at harvest time in fees on net woodchip sale proceeds, the amount of which is heavily dependent on two unknown variables–the actual wood yield and the woodchip price. Using Great Southern Plantations' assumed wood yields, costs, prices and various conversion rates presented in their 2007 and 2008 Product Disclosure Statement and assuming all costs and prices remain unchanged in real terms over the 10 year investment, reveals that investors would receive a 1.9% per annum nominal return on their investment: a loss in real terms (taking the average in Great Southern Plantation's expected inflation rate) of -0.6% per annum. At least for products with high front-end loading of costs, the concern that plantation MIS may direct capital away from profitable uses is valid. Products with lower establishment fees but with the Responsible Entity sharing a greater proportion of the net sales proceeds are more difficult to evaluate because of the uncertainty about future wood yields and woodchip prices. Many analysts have claimed the projections are overly optimistic for both variables (for a history of the debate see Ajani 2007 pp. 254-258), but the proof is in the pudding.

Plantation MIS Product Disclosure Statements typically do not include any direct statement or information about forecast project returns (ASIC 2009). Rather, relevant information is presented in an independent (forestry consultant) expert's report included in the Product Disclosure Statement, but limited to forecast wood yields and prices. This arrangement, which meets ASIC's requirement that Responsible Entities have reasonable grounds for any forecast statement (otherwise remain silent), means that investors have to calculate the return on investment or seek financial advice.

The plantation MIS subsidy issue revolves around establishing whether investment in plantation MIS is inherently profitable. It is time to move into tax law and the ATO treatment of plantation MIS to examine how the ATO has deemed plantation MIS a commercial activity, thereby enabling investors to deduct costs against income earned elsewhere. These arrangements are crucial for plantation MIS viability.

2.2 Taxation aspects–plantation MIS commerciality

Following its loss in the courts over Budplan MIS, the ATO introduced Product Rulings in June 1998. Product Rulings allowed MIS Responsible Entities to provide relevant information for the ATO to rule on deductibility of scheme payments for investors. As long as the MIS was implemented according to the information on which the ATO made its decision, investors could be certain about the deductibility status of their claims. Obtaining a Product Ruling requires the Responsible Entity to supply the ATO with, amongst other things, an extensive amount of information supporting the profitability of the project–cash flow forecasts, budgeted profit and

loss statements and expert reports on these forecasts (ASIC 2009). Much of this information is not presented in the publicly available Product Ruling documentation. Plantation MIS Product Rulings (see for example ITC 2008) list clear factual information about the project, like establishment costs, fixed fees, location, species, plantation area etc., but not forecast returns, wood yields or prices. When it comes to scheme commercial viability, the ATO distances itself and advises investors to 'form their own view' and emphasises that Product Rulings do not guarantee commercial success:

> '*[T]he Commissioner* ***does not*** (ATO emphasis) *sanction or guarantee this product. Further, the Commissioner gives no assurance that the product is commercially viable, that charges are reasonable, appropriate or represent industry norms, or that projected returns will be achieved or are reasonably based.*'

In 2000, the Government responded to the Ralph Review of Business Taxation with, amongst other things, Division 35 amendments to the ITAA. The amendments aimed to remove the practice of presenting consumption expenses for non-commercial activities (for example, hobby farms) as business expenses. After first passing the business (as distinct from hobby) test, individuals or partnerships seeking to claim deductions for investments in new businesses against income earned elsewhere had to pass Division 35 rules for commerciality. The tests being that the business passes one of the following:

1. has an assessable income from the activity of at least $20 000, or
2. has produced a profit in three out of the past five years, or
3. uses real property or an interest in real property worth at least $500 000 on a continuing basis, or
4. uses other assets worth at least $100 000 on a continuing basis.

Leaving aside very important arguments about the commerciality tests' arbitrary and inequitable nature and scope for improvement (Lacey and Watson 2004), a review of matured (ex post) hardwood plantation MIS investments would probably find that most failed the first test and probably no plantation MIS investor would pass the other three tests (Test 2 is inappropriate for most hardwood plantation MIS with income received in the final year of a ten year investment).

Plantation MIS investors have received dispensation from Division 35 with the ATO Commissioner exercising discretionary powers in specified areas. One being to give dispensation where the business has a lead time between the commencement of the activity and the production of assessable income and because of this is yet to pass one of the four tests but there is an expectation that it will do so. The example given by the ATO is an activity involving the planting of hardwood trees for harvest where many years would pass before the activity could reasonably be expected to produce income (ATO 2009a). To make the connection: the commercial loss provisions, which are specifically addressed in product rulings, require the ATO to consider the commercial viability of plantation MIS. In using his discretionary powers to give plantation MIS investors the right to deduct investment costs against income earned from other activity, the Commissioner must have judged that plantation MIS investments are inherently commercial by some criteria.

Lacey and Watson (2004) report that there is no publicly available data on the ATO's operation of Division 35. Within the ATO's system are tax returns from thousands of plantation MIS investors containing the key ex post information on deductions claimed and income declared for plantation MIS investments. A survey would clarify the return on their investment–the single most important piece of information in establishing the commercial viability of plantation MIS. It is also apt for the ATO to periodically (say five yearly) review the process and information used to rule on plantation MIS dispensation from Division 35 commerciality tests.

2.3 Market evidence of plantation MIS profitability

Doubts about the profitability of plantation MIS investments surfaced in the mid 2000s, with early plantings coming on stream. Great Southern Plantations purchased all the wood from its 1994 project for $6.4 million, thereby meeting the investors' expected returns, and sold the wood into the chip market for $2.1 million (Anon. 2006).

The collapse and subsequent sale of Timbercorp's plantation assets to an international forestry investment fund provides further market valuation of plantation MIS investments. The sale included a $198 million payment to investors and the termination of MIS arrangements (KordaMentha 2009). With Timbercorp's 90 000 hectares of plantations (including large areas approaching maturity), this equates to an average $2 200/hectare, significantly less than the establishment costs of any plantation MIS product currently on offer. In late December 2009, Gunns received Great Southern Plantation MIS investor approval to become Responsible Entity for approximately 122 000 hectares of their predominantly hardwood plantations established through the now collapsed Great Southern Plantations (excluding Tiwi Islands plantations). At the time of writing, Gunns' costs exclude any freehold land owned by Great Southern Plantations but include approximately $8.7 million for property, plant and equipment, water licences, insurance payment receivables and inventory and additional sums for managing the plantations over their first rotation. These costs are not expected to exceed approximately $20 million in any given year (Gunns 2009). Gunns also established flexibility over the age when plantations will be harvested (and therefore when investors will receive income) to allow for drought and market conditions. Investors in Great Southern Plantation 1998 to 2005 schemes will receive net harvest proceeds of an (area weighted) average of 63.4 per cent (Gunns 2009). Investors in Great Southern Plantation schemes expected to receive 94.5 per cent of net harvest proceeds. In addition to the reduction in their share of net harvest sales revenue, investors are likely to have revised downwards their expectations of total harvest revenue to more realistic levels.

The above mentioned 2009 Parliamentary Joint Committee on Corporations and Financial Services inquiry into agribusiness MIS drew submissions relevant to the potential inflated cost problem. A corporate lawyer with 15 years experience in MIS advised of his 1995 plantation costing $1 200/hectare to establish on his farm through a forestry contractor. At the time, Great Southern was selling product at $9 000/hectare (Smart 2009). Smart's establishment costs align with those reported by Adrian de Bruin, former managing director Auspine Ltd. and a plantation forester

(Ajani 2007, p. 254). de Bruin also considered that as little as 25 per cent of the money raised through plantation MIS would be returned to the investor (Anon 2001).

In contrast to this public evidence of substantial losses to plantation MIS investors, there appears to have been no public counter examples of profitability presented by Responsible Entities, TIMA or investors. Perhaps there is a valid explanation. Alternatively, perhaps investors have remained silent about any losses, fearing that declared losses may invalidate their earlier deductions (for expenditures on a business the Tax Commissioner judged to be commercial) against income earned from other activities. And a related point: investors may also be comforted knowing the tax office generally requires records to be kept for audit purposes for only five years–less than the time between plantation costs being declared and income received.

2.4 Estimating subsidies for plantation MIS

The Productivity Commission advises that their estimated effective rates of assistance to industry exclude subsidies through the plantation MIS arrangements, with the exception of an estimate for a now removed taxation provision, originally called the 13-month rule (Productivity Commission 2009). Quantifying the assistance measures is complicated by the complexity of the financial and taxation arrangements of the schemes and severe data limitations. An ATO investigation of ex post plantation MIS investment performance, as discussed earlier, would fill a substantial information gap: as could ASIC in its work to make Australia's financial markets fair and transparent so that investors and consumers make informed decisions. ASIC's information transparency role is discussed in more detail below.

The approach taken in this paper to estimate the subsidy to forestry through plantation MIS is to first simplify the task by limiting the investigation to the major product–MIS investment in hardwood chip plantations. This will underestimate the subsidy by excluding the relatively small investments in softwood and hardwood saw and veneer log plantation MIS. Three approaches, as detailed below, were developed and the subsidy for each estimated using the following information and assumptions:

- New MIS hardwood plantings over the five years 2004 to 2008 inclusive are estimated to cover 290 000 hectares (calculated using ABARE (2009) for total hardwood plantation area and Gavran and Parsons (2008) for ownership mix based on 2007 data). It is assumed that 90 per cent of the area is for chip production managed over rotations of around ten years–260 000 hectares.

- $3.7 billion invested in hardwood and softwood plantation MIS over the past five years (ASIC 2009 p. 49).

- From the above, and deducting investment in longer rotation saw or veneer plantations with an arbitrary adjustment (because there is no publicly available data), the average hardwood plantation MIS investment over this five year period is assumed to be $10 000/hectare.

- The actual cost of planting a hectare of trees and managing them over the approximate 10 year rotation was estimated at $2 000/hectare (Ajani 2007 p. 255).

- All investors are in the top marginal tax rate.

Approach 1: Tax deduction for true costs only

If deductions on income were limited to the true cost of plantation establishment and management over the rotation[1], the difference between this amount deducted and that under the plantation MIS arrangements represents the investor's assessment of the tax benefits of the higher cost MIS arrangements.

This approach generates an estimated tax-based subsidy of $0.9 billion over the five years to 2008, $187 million per annum.

Approach 2: Investor informed of return reality

The tax benefit to the MIS investor is the tax deferral, but only if the MIS investment generates a positive return at the investor's opportunity cost of capital. If not, the MIS investor would have been better off paying the tax rather than investing in the scheme.

At this point, the complexity surrounding the investment return is revealed: as is the importance of the ATO/ASIC making available ex post return on investment data. Conceptually, plantation MIS have three returns to investors:

- the prospectus forecast return (which the investor must determine from the information in the Product Disclosure Statement which is heavily dependent on wood yield and chip price assumptions),

- the actual return (which may or may not have a Responsible Entity cross subsidised component as practiced, for example, by Great Southern Plantations for its 1994 plantings), and

- the 'true' return (not known, but may be possible to estimate through linking an ATO survey of tax returns with Responsible Entity financial accounts).

While the actual and 'true' return should align eventually, the potential for tax-based subsidy in the intermediate term may be substantial following the Timbercorp and Great Southern Plantations collapses. Just as Great Southern Plantations had a commercial incentive to subsidise the returns to its 1994 investors (therefore maintaining confidence in plantation MIS to attract new high fee-paying investors), the same motivation applies to other Responsible Entities. If another Responsible Entity acquires a collapsed scheme at significantly below cost, this will enhance the Responsible Entity's capacity to engage in this internal to the company cross-subsidy strategy.

[1] This should be read as hypothetical. How much a taxpayer ought to spend in obtaining income is the taxpayer's commercial decision and not for the ATO to say (ATO 2009).

Information asymmetry through moral hazard and principle-agent relationships are a feature of plantation MIS. Investors face the moral hazard reality that Responsible Entities, who act on their behalf, have more information and are also more insulated from the risk of their decisions: Responsible Entities may behave differently if they were exposed to the risk equally.

It is likely that no investment in hardwood chip plantation MIS would have occurred if investors expected a 1.9% per annum return (nominal), as calculated earlier in this paper for Great Southern Plantations. Investors, most with their opportunity cost of capital many times higher than 1.9%, would be better off paying the tax rather than investing in the plantation MIS.

In this case, all the tax deduction on plantation MIS would be a direct subsidy to the forestry industry. Extending across all hardwood plantation MIS, the tax based subsidy to forestry over the five years to 2008 is estimated at $1.2 billion, $234 million per annum.

Approach 3: Opportunity cost

The difference between the MIS investor's expected return and the yield on risk-free 10 year Treasury bonds gives a highly conservative estimate of the investor's valuation of the tax benefits of plantation MIS.

On the basis that investors did their own calculations on a plantation MIS and estimated a return of 1.9% per annum (using the earlier Great Southern Plantations example) and proceeded with the investment, we can take the difference between the 1.9% and 5.35% (current 10 year Treasury bond yield) as the investor's valuation of the tax benefit of plantation MIS. This is a highly conservative estimate because most investors have a higher opportunity cost of capital than risk-free Treasury bonds.

The tax based subsidy to forestry through plantation MIS investments over the five years to 2008 is estimated at $1.0 billion.

2.5 Summary

The estimates of the subsidy to forestry through the plantation MIS using the three approaches range narrowly between $0.9 to $1.2 billion over the five year period ending 2008. Obtaining actual return to investor data is the single most important piece of information for enhancing the quality of the subsidy estimate. In addition, such information would improve substantially on that currently available to investors and go some way to addressing the asymmetric information problem.

3. Effective rate of assistance to growers of wood and food

3.1 Introduction

Governments of fossil fuel powered societies, confronted with the catch up effects of the resultant green house gas pollution, seek politically attractive approaches to the climate change problem. Offsetting fossil fuel emissions using land-based

sequestration, through tree planting in particular, appears to be gaining traction in countries with relatively large agricultural land assets, such as Australia. A potential risk lies in the diversion of resources away from food production to carbon uptake. Because human survival requires climate security, food security and water security, prudence is required in formulating climate change policy to avoid such unintended consequences as food shortages. The Productivity Commission's effective rate of assistance (ERA) measure is apt for evaluating and monitoring government climate change policy effects on agricultural land and water use.

The Productivity Commission (2009 p. 18) advises that the ERA measure for the industry sector 'Forestry & logging' is a significant underestimate because it excludes under-priced native forest wood and tax based assistance through plantation MIS. The plantation MIS subsidy estimates presented in the previous section of this paper fill one gap, leaving outstanding the assistance to Forestry & logging through state government native forest wood pricing policies. As argued in the next section, it is important to fill the gap concerning subsidised native forest wood even though most plantations are now established on cleared agricultural land.

Although beyond the scope of this paper, it should be noted that unpriced access to water by plantations is another form of assistance with trees using water from a much deeper soil profile than annual crops, which impacts on groundwater flows into rivers and streams.

3.2 Wood stumpage price subsidies

Historically, a range of statutory marketing arrangements, regulations and price support schemes made up the bulk of the measured assistance to agriculture. Most have now ceased in food growing (Productivity Commission 2009 p. 14), but native forest wood remains subsidised through state government stumpage (log price less logging and haulage costs) policy. This assistance escapes measurement because state and territory government assistance to industry, other than designated agricultural marketing arrangements and rural support programs, is not covered in the Productivity Commission's assistance estimates (Productivity Commission 2009 p. 4). Based on ABARE sawmill survey data (Burns *et al*. 2009 p. 9), approximately 80 per cent of native forest wood sold in Australia was sourced from public land in 2006/07. Although plantation products continue to displace native forest wood products in all major markets (Ajani 2009), it is incorrect to conclude that the distortion created by subsidised native forest wood will eventually resolve itself. Rather, new native forest wood opportunities, most notably bioenergy, are being sought. If realised, the resource use distortion from subsidised native forest wood will broaden into the energy sector. This issue is discussed later in the paper.

Native forest wood underpricing may have also influenced the heavy concentration of plantation managed investment schemes to the hardwood chip market. Due largely to low wood stumpages, native forest chip exporters appear to have enjoyed many decades of extraordinary profits (Ajani 2007). These profits are rarely reported: the information integrated with other business activities, like sawmilling and pulp production. The Eden based South East Fibre Exports (SEFE) is the exception with its business, until recently, virtually entirely concentrated on native forest chip exporting. SEFE's after tax profit on equity averaged 34 per cent over the three decades to 2005

(Ajani 2007 p. 245). An easing in this long period of very high profits emerged from the late 1990s with SEFE's after tax profits on equity tracking slightly above 20 per cent (Financial statements lodged with the Australian Securities and Investment Commission). Implicit in the 1990s structuring of the plantation managed investment schemes is the assumption that the historical profit sharing arrangement built up between the (Japanese) chip buyers and the Australian native forest chip exporters (Ajani 2007 pp. 110-113) would remain. In other words, all hardwood plantation chip buyers would behave like the post WWII resource security-conscious Japanese paper industry and not use their buying power to forcefully drive real chip prices down. On paper, the architects of plantation MIS switched the high profits saturating Australian native forest chip exporters to the plantation MIS investors. The reality of this implicit assumption about market power is questionable, especially if Responsible Entities expect China to become a major buyer of Australian hardwood chips.

Evidence of state government subsidised native forest wood and its extent has been researched periodically (see for example Byron and Douglas 1981, Dragun 1995). The research, however, is constrained by substantial information gaps in forestry agency financial reporting and the complexities in valuing 'multiple-use' public native forests for the purpose of determining returns on net assets (Forests Advisory Committee to the Minister for Economic Development 1983). In the near three decades since the Victorian Forest Advisory Committee's report, there has been no advance in overcoming these information gaps in Australia's main native forest wood supply states, with the exception of Victoria. Table 2 lists the basic information required to investigate native forest stumpage price subsidies and checks this off against the information provided in the latest financial accounts of the forestry agencies of Tasmania, Victoria and New South Wales–together accounting for 89 per cent of Australia's native forest wood production in 2007/08 (ABARE 2009). Only Victoria gets to first base–presenting separate native forest financial accounts–the unintended consequence of privatising its plantation business in 1998. Forestry Tasmania, Australia largest native forest wood supply business, does not report its profit (loss) for native forest business activities separate from its plantation activities; the same for Forests NSW. For these two states, not even native forest stumpage revenue is reported.

Theoretically, plantation parity pricing offers a way through these financial reporting gaps. Applying plantation parity pricing, however, runs into problems. In excess of 80 per cent of the log cut in Australia's major native forest logging regions is geared to woodchip production (Ajani 2007) and most of the substitutable hardwood plantation chip production is linked to MIS. Therefore, using plantation MIS log stumpage price assumptions is likely to generate a significant over-estimate of the native forest stumpage price subsidy. An alternative approach is to answer the question: what native forest stumpage price would Vicforests (the only state reporting on the profit performance of its native forest wood production business, see Table 2) need to cover its costs? The answer sets a lower limit to the estimated subsidy because there is no allowance for any dividend to the state of Victoria for its native forest business activities.

Table 2 Transparency in stumpage prices and financial reporting for public native forest wood production in Victoria, Tasmania and NSW

	VicForests (2008/09)	Forestry Tasmania (2008/09)	Forests NSW (2007/08)
Average native forest stumpage price	$16.50/m^3	not reported[5]	not reported[7]
Net profit (loss) on native forest operations ($ million)[1]	($5.0 million)	not reported[6]	not reported[8]
Native forest log production. (million m^3 [2])	1.9 million m^3	2.4 million m^3	1.1 million m^3
% pulplogs[3]	66%[4]	77%	41%
Area of public native forest available for wood production (million hectares)	3.2 million ha	1.0 million ha	2.0 million ha

Source: VicForests 2009; Forests NSW 2009; Forestry Tasmania 2009; Audit Office NSW 2009; ABARE 2009.

1. Profit (loss) after market adjustments, asset revaluations and tax.
2. Quantities reported in tonnes converted to m^3 using 1.1t = 1m^3.
3. Unquantified proportion of sawlogs are used in pulplog based products.
4. 2007/08 estimate calculated by deduction using ABARE reported sawn timber production and sawn timber recovery factors.
5. Annual stumpage price data is collected and used in forest asset valuations but reporting is limited to annual changes in stumpage.
6. Forestry Tasmania reported a $32 million profit, which includes profit (loss) on plantation activities. 2008/09 profit is a marked turn around from previous year loss of $38 million despite an 11% volume decline in log sales from 2007/08 to 2008/09.
7. Stumpage revenue is reported for all log sales–68% was from the plantation estate.
8. Audit Office NSW (2009) reported a loss of $14.4 million.

Eliminating Vicforest's $5 million loss in 2008/09 requires a 16 per cent increase ($2.60/m^3) in its native forest stumpage price. Extending this $2.60/m^3 increment to Tasmania and NSW generates an increased annual stumpage revenue across the three states of $14 million. This is considered a conservative estimate of the subsidy on wood from public native forests.

3.3 Effective rates of tariff and budget assistance to food and wood growers

The shifting of wood production to plantations has brought new competition to certain food growers for agricultural land and water. This competition aligns approximately to the Productivity Commission's industry classifications 'Dairy cattle farming' and 'Grain, sheep & beef', which includes wool and omits fisheries, horticulture and fruit growing and other crop and livestock farming. From here on, these activities are referred to as food growing.

The Productivity Commission's estimated assistance to food growing, including drought related payments, is presented in Table 3. Also presented is the estimated assistance to Forestry & logging totalling $272.5 million in 2007/08. This comprises the Productivity Commission calculated net tariff assistance of $12.9 million (Productivity Commission 2009 p. 17), estimated state government native forest wood pricing assistance (calculated in Section 3.2), Productivity Commission estimated Commonwealth Government outlay assistance of $35.6 million (Productivity Commission 2009 p. 17) and the estimated assistance through plantation MIS taxation arrangements of $210 million (calculated using the average of the first two approaches in Section 2.4).

Table 3 Effective rate of tariff and budgetary assistance for wood and food growing 2007/08 (%)

	Net tariff assistance ($ million)	Budget based assistance ($ million)	Tax based assistance ($ million)	Net combined assistance ($ million)	Unassisted value added ($ million)	Effective rate of combined assistance (%)
Forestry & logging	12.9	49.6	210.0	272.5	652.6	41.8
Grain, sheep & beef	-15.9	937.7	107.2	1 028.9	14 290.3	7.2
Dairy cattle farming	-3.6	300.3	21.8	438.7[a]	2 535.8	17.3[a]

a. Combined assistance includes $120.1 million for agricultural pricing and regulatory assistance that ceased in April 2008. Source: Productivity Commission 2009 with gaps in Forestry & Logging filled using the analysis presented in Sections 2.4 and 3.2 of this paper.

The estimated effective rate of combined assistance to Forestry & logging is 41.8 per cent: government assistance is equivalent to 42 per cent of Forestry & logging's unassisted value added. This exceeds substantially the assistance (including drought related payments) to food growers (Table 3). At such significant differentials, government assistance works to redirect agricultural land, water and other resources away from food growing to wood growing relative to an unfettered market outcome.

4. Policy discussion

4.1 Who bears the risk?

Australia's Constitution, which saw the states retain responsibility for Crown land, has influenced greatly the nature of government assistance to the wood and wood products industry. State public servant foresters managed public native forests to supply wood to private industry. This arrangement continues today with subsidised wood contributing to the losses of government native forest wood production businesses (Table 2 including note 8) to the advantage of native forest wood processors. Because competing forest land uses (largely native forest conservation) operate outside the market, land use contests play out in the democratic competition for votes. Effective rates of assistance measures cannot easily bridge the two markets: the market for votes and the market for profits. Long-entrenched subsidised native forest wood has slipped under the radar in industry policy.

Australian forestry changed fundamentally with the introduction of agriculture for wood production–plantations. It brought new players and technology into the industry's manufacturing arm and raised productivity and competition. The associated substantial Commonwealth Government assistance for tree planting over the 1970s and 1980s–mainly softwoods for sawlog production (Ajani 2007)–did not however generate new competition for agricultural land because most of the land for planting was obtained through clearing native forests. In this situation also, effective rates of assistance measures are marginalised.

Clearing native forests for plantations, however, triggered waves of protest (Plumwood and Silvan 1973) and now all states have policies restricting, to varying degrees, clearing native vegetation for plantations. Australia's adoption of the Kyoto protocol carbon accounting system is likely to further reduce planting on native forested land because, under Kyoto accounting, the land is considered to remain 'forested': therefore, tree planting can not be recorded as CO_2 removal to earn credits. Plantation wood growing in Australia is now focussed largely to agricultural land and the importance of generating realistic ERA measures for forestry shifts from being of marginal value to highly valuable in quantifying the distributional effect of government polices on agricultural land, water and other resource use.

Over Australia's 130-year plantation wood growing history, many arguments have buttressed the case for government assistance for plantation establishment: self-sufficiency and by implication the trade deficit, addressing land degradation, as countervailing assistance to low native forest log stumpages, regional development, to address market failures associated with long rotation times, rural jobs and more recently CO_2 removals. Leaving to one side CO_2 removal that is discussed below, the argument that retains traction concerns the linkage of long plantation rotations to capital market failure (see for example Parliamentary Joint Committee on Corporations and Financial Services 2009 p. 46). There appears, however, to be no evidence of capital market failure resulting in plantation investors not being able to access finance. Higher interest rates may accompany finance for planting, but this is normal for any long-term and therefore more risky investment.

Government engagement in native forest wood production originally linked the public sector to the risk associated with long lead-time forestry. Wood buyers–the manufacturing arm of the industry–have become accustomed to this arrangement for well over a century. When state governments started investing in plantations, the risk-sharing arrangements generated oversupplied wood markets, again highly attractive to cost-conscious commodity wood buyers (Ajani 2007). When state governments began scaling down their plantation investments from the early 1990s, new plantation investment flattened for a decade before the revival by plantation MIS. Under plantation MIS, the market risk remained deflected from wood buyers with tax minimising investors joining the public purse to bear most of the risk. Decades of successful risk avoidance explains forestry's high effective rate of assistance measure as presented in Table 3. The challenge for governments seeking to bring forestry's effective rate of assistance into line with that of competing agricultural land and water users is to encourage the wood and wood products industry to grow up economically. This means, in particular, an industry whose managers and boards are able to manage risk and governments who prevent industry deflecting risk onto the public purse.

If the ERA differential between forestry and food growing remains significant, agricultural land and water will be allocated inefficiently to wood and away from food. Some in the forestry industry may see this as correcting for past land clearing for agriculture: ignoring that plantations are agriculture not native forests. Whilst the tension between forestry and traditional agriculture has dissipated since the days when forest agencies were branches within land departments that facilitated extensive land clearing, it would be wrong to conclude that growers of food and wood are partners in the Australian agricultural enterprise with resources, especially land, allocated through unfettered market price signals. Today, government forestry policy (notably

at the national level) is integrated within the agriculture portfolio but the forestry industry lobbyists continue their historical practice of remaining outside the agriculture club. This brief historical policy background, combined with the ERA analysis, establishes the context for examining the role the Australian Government is now creating for plantations in climate change policy.

4.2 Plantations and the proposed emissions trading system, renewable energy targets and tax arrangements for carbon forest sinks

Tree planting ('reforestation' or 'afforestation' using Kyoto protocol terminology) is the only land use CO_2 removal activity able to participate in Australia's proposed emissions trading system (ETS).[2] Opting-in 'reforestation' participants would be required to establish a Kyoto 'forest' for 100 years, this being a 0.2 hectare or greater area of trees that have the potential to reach two metres in height with a 20 per cent or more canopy (Australian Government 2008). Opting-in participants face two 'reforestation' options:

- not for harvest projects–trees grown for carbon storage and not harvested over the 100 years, or

- wood and biofuel production projects–with logged areas replanted to maintain the land as Kyoto compliant 'forest' for 100 years.

It is unlikely that productive food producing land will be used in the 'not for harvest option' given its opportunity cost of a century of income from food growing. (The efficiency of planting and maintaining an area of trees for 100 years relative to other carbon storage options like not clearing native vegetation, restoring degraded native forests or establishing criteria to ensure the planted 'forests' are multi-species and have self-regenerating capacity is a very important issue but out of the scope of this paper.)

The second option–establishing new areas of Kyoto 'forests' for wood, biofuels and other products–will bring increased competition for agricultural land and water and highlights the importance of comprehensive ERA measures for wood and food growing. Under this option, the Government proposes to issue permits (CO_2 credits) for tree planting on an average crediting basis (Australian Government 2008). Permits would be issued for net greenhouse gas removals up to a limit. For a 25 year rotation plantation, for example, opting in growers would receive permits over the first half (approximately) of the first of the four rotations. By limiting permits to the average of the carbon stored in the 'forest', growers will not be required to buy permits for the

[2] Using land based CO_2 removals to offset fossil fuel emissions is double-dipping, made possible in the setting of the base year for carbon accounting. Most of the carbon emissions from earlier land clearing, in Australia and globally, remain as a stock in the atmosphere. Replanting trees will draw down that stock, but Australia's proposed ETS has tagged the drawdown as an offset against fossil fuel emissions (Brendan Mackey pers.comm.). Globally and from a science perspective, the base should be set pre the industrial revolution because emissions since the industrial revolution remain in the atmosphere as a stock. Combining this base with rigorous carbon accounting (incorporating carbon stocks and all major flows from the land sector measured in gross terms (Blakers 2009) as is done for financial accounts), would establish scientific rigor to the treatment of land-based offsets. The funding of efficient and effective land based climate change mitigation activities can still be linked to carbon trading/tax revenue but not via offset credits against fossil fuel emissions.

emissions on logging or for any emissions through fire so long as the 'forest' is replanted after these events. This arrangement means that, once the 'forest' is established, the CO_2 price signal to growers is blocked for the next 100 years. It effectively ensures that the 'forest' will be harvested for wood (or biofuels) despite movements in CO_2 prices relative to wood. In addition, it is unclear to what extent the public will bear the risk if a plantation is destroyed or otherwise fails to store carbon for the required period and it appears the public bears the emissions cost if the plantations are not re-established after the 100-year expiry date.

In unfettered markets however, plantation owners are likely to forgo wood production and preference carbon production at relatively low CO_2 prices. This is because only half the plantation biomass is suitable for wood production but all the plantation biomass is suitable for selling into a carbon market (Wood and Ajani 2008). The average crediting approach ensures that a CO_2 price signal works to stimulate plantation investment, but once the plantation is established, average crediting eliminates the CO_2 price signal and therefore the risk to wood buyers of growers preferencing the carbon market and keeping plantations unlogged.

In August 2009, Australia adopted a 20 per cent renewable energy target. Renewable sources would account for 20 per cent of grid-based electricity production by 2020. Wood from both native forests and plantations was classified as a renewable energy source. The Government considers that provided the land remains forested, logging for wood and/or biofuels is carbon neutral and therefore should be CO_2 cost free. Leaving aside the issue of the ecological soundness or otherwise of using native forests for electricity, the carbon neutrality ruling ignores the temporal dimension of carbon flows in a plantation wood growing regime. The CO_2 emissions from biofuels made from say 20-year-old plantations will be CO_2 cost free for the 20 years of regrowing required to drawdown the emissions (In reality the removals are offsets to earlier land clearing, see footnote 2). These arrangements work against efficient resource use in the energy sector by disadvantaging renewable energy systems that have no temporal risk for climate change mitigation. So far, there are a limited number of plantation MIS that include biofuels in the product mix (see for example ATO Product Ruling 2007/45).

Completing this description of the regulatory framework for plantations in Australia's climate change policy requires mention of the still contested interpretation of subsection 40-1010(3) of the ITAA. Senator Milne, on the basis of legal advice that capital expenditure 'in relation to' the establishment of trees in carbon sink forests means that land purchase costs and other associated capital costs are fully deductible upfront from 1 July 2007 to 30 June 2012, moved to disallow the guidelines relating this part of the ITAA (Senate Hansard 1 December 2008 p. 7716). The motion generated a long debate, which on reading appears not to clarify the taxation treatment of capital expenditure for carbon sink forests. Perhaps the legislation could have been drafted more clearly, but Milne's legal advice warns that the near unimaginable may be a legal reality: that capital expenditure 'in relation to' the establishment of trees for carbon sink forests may be fully deductible. If correct, the amended legislation would be a fundamental change from the ordinary taxation treatment of capital expenditure.

Research into the effect of the ETS on agricultural land use change has ignored the plantation MIS tax-based subsidy, although the MIS arrangement is likely to be the

implementation mechanism. Lawson *et al*. (2008) estimate that at a CO_2 commencement price of $20.88/t in 2010 increasing by an average 4 per cent per annum to 2050, around 5.8 million hectares of agricultural land may shift into 'forested' land: around 3 million hectares as commercial plantations and 2.7 as environmental plantings. At a commencement CO_2 price of $29.10/t, Lawson *et al*. (2008) estimate a 26 million hectare 'forestry' land use change between 2007 and 2050 comprising slightly over 4 million hectares of additional commercial plantations with the remainder being environmental plantings. The CSIRO, based on work they describe as "prospecting' for opportunities", reports that 17 million hectares of agricultural land may be suitable for carbon 'forestry' through a combination of biodiverse carbon sink plantings and commercial plantations (CSIRO 2009 p. 12 & 112). Like Lawson *et al*. (2008), the research ignores the plantation MIS arrangement and complementary measures to classify wood as a carbon neutral renewable energy source. The omissions reinforce the importance of incorporating plantation MIS arrangements into the Productivity Commission's ERA measures.

5. Recommendations

The preliminary ERA estimates presented in this paper incorporating government assistance to Forestry & logging through the plantation MIS suggest substantial distortion in resource use in Australia's agricultural industries, away from food to wood. The plantation MIS, combined with emerging climate change policy for the land use sector which privileges tree planting as the sole land-based offset in the proposed ETS and assumes away temporal issues in classifying wood as a carbon neutral renewable energy, is likely to exacerbate the distortion.

To create the information for policy debate and policy making, evaluation and monitoring, it is recommended that:

1. Treasury and the ATO conduct five-yearly reviews (with the first to be undertaken immediately) of the process and information used to rule on plantation MIS dispensation from Division 35 commerciality tests.

2. The ATO, ASIC, Treasury and Productivity Commission establish a publicly accessible plantation MIS reporting and monitoring system where, at a minimum, the key variables–return on investment, wood yield and woodchip prices–are tracked over time for each project.

3. The Productivity Commission's ERA estimates be expanded immediately to include assistance through plantation MIS using, in the first instance, Approach 1–tax deduction for true costs only.

4. Failing State Government engagement in Tasmania and New South Wales in particular, the Australian Government intervenes to ensure greater transparency in state native forest wood production businesses, including separate financial reporting of native forest wood production profits (losses), stumpage revenues and log sales for major product groups (saw/veneer log, chip log and bioenergy).

To assist in policy development aimed at food and climate security, it is recommended that:

5. The Australian Government initiate a major investigation into the land use sector's potential contribution to climate change mitigation, setting as the first task the compilation of a coherent system of land use sector carbon accounts that includes carbon stock measures together with separately reported emissions and removals.

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