In the early to mid 1990s, a number of local and global factors came together to provide a very attractive basis for the development of a new industry in the Green Triangle region of south-west Victoria and south-eastern South Australia—the industry based on the short rotation of hardwood timber. Since then, the rapid growth of this industry has resulted in much debate as to its pros and cons, and a considerable amount of misinformation has been promoted on both sides. Fortunes have already been made and the first stage of development of the industry has almost been completed. The region has a sufficient critical mass of product for it to add to the future wealth creation of the region, although with some likely future rationalization.

At the time the industry was first established in the region, global changes were occurring in regard to the availability of timber worldwide and concerns were growing that demand would soon outstrip supply. The projected shortage was a result of reductions in tropical forest harvesting and legislated reductions in the annual harvest for many traditional timber supply areas, such as North America. Also, there was an increasing demand for timber and wood products in both the developed and developing regions of the world.

The demand situation for short rotation hardwood eucalypts—principally for wood fibre production—was similar. Eucalypt chip is used for the production of bleached pulp which, in turn, is used for producing printing and writing grades of paper. However, in Australia the prime minister had announced that woodchips from native forests were to be progressively covered by Regional Forest Agreements between the commonwealth and state governments. As part of this program, exports of hardwood chips were to be reduced by 20 per cent (a total of 5 million tonnes) in 1996, with further reductions of 20 per cent per year for all hardwood chip exports not covered by Regional Forest Agreements.
At the same time, the ‘2020 Vision’ policy came into play, and it aimed to treble the area of plantations in Australia by 2020. This appeared to be a rather nominal figure as it only called for a trebling of the area of plantations to 3 million hectares, without mentioning anything about yields per hectare. However, it gave industry an incentive to invest in plantations, and the opportunity opened up for specially grown hardwood plantations on private land. A longer rotation of sawlog plantations would have been far preferable, but the climate in the wetter regions of southern Australia was deemed suitable for growing *Eucalyptus globulus* (Tasmanian blue gum) over short rotations, especially for high quality wood fibre, and investment in short rotation plantations is a far more attractive proposition than investments in longer rotation plantations.

**Farm Forestry in Australia**

Plantation ownership in Australia had historically been dominated by state governments, funded by commonwealth loans to the various state forest agencies. In the 1960s, 1970s and 1980s, federal and state governments actively promoted, and heavily subsidized, the development of new plantations, resulting in an increase in the overall plantation area from about 330,000 hectares in 1967 to over one million hectares in 1992. In the 1960s and 1970s, most of the plantings involved clearing native forest, but political pressure eventually forced the governments to shift planting sites to previously cleared agricultural land. This shift onto a broader range of soil types (often heavily modified by agricultural practices) increased the observed range of plantation productivity and forced a shift in both research focus and silvicultural practices. The deregulation and opening up of the Australian economy to world pressures in the 1980s also had an impact on the management and expertise in developing new plantations. This allowed the plantation resource to become more diverse in regard to species planted, climate and soil types used, prior land use, ownership of the plantations and marketing potential. While *Pinus radiata* still dominated the plantations at this time, there was a move towards more eucalypt plantations.

Since the early 1990s, the private sector has been the principal driver in the expansion of eucalypt plantations, and private plantations favoured the short rotation plantings, where private investors qualified for tax exemptions compared to the more traditional forms of forestry. In the mid-1990s, there was further pressure to reduce the logging of native forests, and government-funded forest research institutes received extra funding to explore the alternatives. *Eucalyptus globulus* was being successfully used to establish plantations on farms in Western Australia, and south-west Victoria was identified as an area where landholders could enter partnerships with forestry ventures.

In the Greater Green Triangle area, blue gums had been planted for amenity purposes and for experimentation for many years. In the late 1980s, Kimberly-Clark Australia, which operated a pulp mill at Millicent, began
encouraging private landholders to grow blue gums in order to reduce their requirements for imported hardwood pulp from overseas, and by the mid-1990s a blue gum plantation base of more than 3000 hectares had been established, with an annual planting program of 600 to 900 hectares. In the meantime, the farmers who owned most of the cleared land suitable for new plantations were in the middle of a serious cost-price squeeze, with their incomes at historically low levels. Furthermore, the Landcare program was providing a very active and informative voice in assisting farmers realize the need to address many environmental issues occurring on farms as a result of earlier misinformation and the use of unsuitable farming practices on our fragile soils.

A major aim of agriculture today is the sustainability of farms, the rural landscape and farm families. The concept of integrating trees into farm businesses has been discussed for many years as part of the overall picture of improving farm sustainability, while addressing land degradation concerns — such as salinity and water quality — and productivity issues — such as shelter for animals. In Australia, as forests and woodlands have been cleared for agriculture, extensive salinity and acidification of soils has occurred. Planting trees back into the landscape is considered to be one piece of the puzzle that might see a more sustainable farming system in place.

Financial Incentives Essential

To the chagrin of government, Landcare and various environmental organizations, and individual landholders have rarely had the financial resources to plant enough trees to make a difference to the environment, especially at a time when low commodity prices and high levels of farm debt have dramatically reduced cash flows. In looking for ways to make more tree planting possible the following factors needed to be taken into account:

- Conservation and productivity must be complementary. Land degradation problems are symptoms of inappropriate land management, and these symptoms are most likely to be fixed if the required management changes benefit the landholders.

- A sustainable farming system must be capable of dealing with more than just the physical layout of the farm. Landholders are used to integrating a wide range of information into their decision making. Opportunities that will provide the landholder with the ability to address land care issues, while at the same time providing profits, are most likely to be taken up.

- Landholders planting trees for a financial return should be encouraged to plan the planting to address longer term concerns over the sustainability of the land.

The use of eucalypts, rather than *Pinus radiata*, creates new possibilities for giving landcare objectives a commercial footing, because the landholders can gain cash flow from harvesting. Ideally, the tree crops can help with land
degradation issues in the short term and then provide income to the farmers in the medium term. A viable tree crop industry might also address many social and business aspirations for stronger ‘regional development’, resulting in increased employment prospects.

Soil salinity problems are quite severe in the south-west region of Western Australia, and that state’s Department of Conservation and Land Management (CALM) has promoted the use of commercial crops of blue gums to address such issues. Dr Gary Inions from CALM has argued that the environmental problems in rural Australia are of such magnitude that solutions must be economically driven. While farm forestry for environmental reasons has proved quite popular, he suggests that not enough plantings will occur unless profit incentives are provided. He also argues that farm forestry will not be viable unless individual landholders get community support and goodwill to sustain their efforts. Individual landholders need to be linked up to other landholders also trying to sustain farm forestry. Dr Inions has reported that CALM already has over 300 landholders participating in their farm forestry programs, with almost 16,000 hectares of *Eucalyptus globulus* planted out by the mid-1990s from a target of 46,000 hectares. As well as the blue gum plantings, more than 10,000 hectares have been planted with other species for commercial forestry. As Dr Inions stressed, the major benefit of farm forestry for landholders is that it provides a diversification of farm income.

As mentioned, landholders in south-west Victoria became interested in blue gum plantations at a time when farm incomes were generally low. The South West Victorian Farm Monitor Project has reported that in 1993-94, net annual farm income was down to $82 per hectare when the longer term average had been $100 per hectare. While net income accounts for the difference between income and operating costs, it does not take into account important factors such as the labour input of farm operators, interest on loans, depreciation of assets or taxation liabilities. So the situation was even worse for individual landholders when they took an interest in blue gums. The figures suggested that the net income for blue gum plantations would be $5,700 per hectare over the life of the plantation (twelve years), meaning an annual average of $475 per hectare. Of course, these returns do not take into account the investment costs during the period of rotation or the project management costs in the establishment phase of the plantations. But the comparison was attractive. Agriculture Victoria has suggested that even if one factors in project management and other costs the annuity value of an investment in hardwood plantations is expected to be $146 per hectare per year, which remains considerably higher than the 1993-94 incomes or the longer-term average mentioned above.

It should be noted that the hardwood plantations also deliver other benefits in terms of increased shelter and reductions in salinity, increasing the carrying capacity of farms as a whole. This means that if a farmer allocated
just 10 per cent of the farm to eucalypts, the farm as a whole would receive a normal farm income and the profit from the eucalypts would be an added bonus.

**Early Projections and Emerging Criticisms**

At the time the blue gum industry was established in south-west Victoria, two feasibility studies had been completed. These estimated that within 150 kilometres of Portland — the maximum distance for economic haulage — there were 1.3 million hectares of suitable cleared agricultural land that received an average of 650 millimetres or more in annual rainfall — the minimum rainfall for *Eucalyptus globulus* plantations. A further study of soils and climate suggested that 790,000 hectares would be suitable for commercial plantations, even if the land base was considered extremely variable. Of this, 190,000 hectares was classified as potentially highly productive. The mean annual productivity over a ten-year rotation was estimated at fifteen to twenty-five tonnes per hectare per year, although most of the area would yield less than twenty tonnes. The reports suggested that more research was needed to determine if the lower priority land could yield commercially viable plantations.

At the time, much of the priority land was being used for conventional agriculture, although large areas were already planted to softwood plantations. It was estimated that sufficient land could be leased from the landholders, with rent paid at commercial rates, to establish a viable export woodchip industry, especially given the proximity of the excellent port at Portland. It seemed that all the economic and environmental factors were lining up attractively, while both state and federal governments were giving verbal support. However, approaches at that time to Australian financial institutions drew a blank, with the common response being that a ten-year investment was not attractive. Overseas financial institutions were more responsive, and two international paper manufacturers committed themselves to the development of the plantation resource. When this was combined with an attractive tax regime for the industry and a growing economy, the investments started flooding in from 1997.

Most of the investment has come through Managed Investment Schemes (MIS), which is often dubbed a ‘tax-effective investment’. Investments by the pulp and paper industry have declined as land prices and land lease payments have escalated to levels considered to be unviable at the current world price for woodchip. For example, land prices for suitable land in 1996 were in the range of $1000-$2000 per hectare and payments to landholders for the lease of suitable land were $100-$150 per annum. In 2006, land prices are often over $8000 per hectare and lease payments are said to be $400 or more per hectare per year. Yet the price of hardwood chip has not moved over the same period. More recently fuel prices have doubled and the cost-price squeeze on rural produce is affecting primary industry once again.
Over the past decade, much debate has been played out in the regional press as to the socio-economic effects that the plantation industry is having on the region, with the debate extending into environmental issues, particularly water consumption, in recent years. Unfortunately for the plantation industry, the absentee landlords and their public relations systems respond ineffectively to the criticisms, and this makes the industry a soft target. Furthermore, some of the responses to the criticisms have lacked credibility because industry representatives have lacked an understanding of local issues and concerns. There is also a legacy of arrogance displayed by advocates of the timber industry over many years that is not helping the hardwood plantation industry.

The levels of investment in the industry have been substantial by agribusiness standards. But some critics say that the industry has been built almost entirely on the foundation of tax incentives and that a long-term evaluation should take this into account. Furthermore, many investors are likely to use the industry for short-term gains and then reinvest in industries that will produce maximum returns in a shorter timeframe and which are not vulnerable to such obvious risks as drought and/or fire.

Some of the local responses to the industry have been rather erratic. For example, one landholder to a plantation initially objected to the planting of the trees, but when the harvest was to occur eight years later they tried to prevent the trees being cut. Another landholder spent many years lobbying against the encroachment of the plantations on ‘quality farmland’, yet when he came to sell his own land he accepted the highest bid, paid by a blue gum plantation company! When it comes to land with good soil and rainfall, farmers can seldom compete with prices offered by the plantation companies, but the question remains as to whether this indicates the strength of the industry per se or just the ongoing effect of tax incentives.

**Clear Gains and Lingering Concerns**

What cannot be disputed is that many landowners have benefited from plantation investments. After twenty years of stagnating land prices up to 1996, those who wanted to sell their land—even if the landholdings were small—often received record prices for their properties. Some landowners have been able to sell the family farm and move to another area to purchase larger and potentially more viable farms. Another group of landowners has used the attractive lease payments to expand their holdings by purchasing land and leasing it back to plantation companies, and some landholders have invested in their own plantations to increase the sustainability of their farms as a whole. In one case, a landholder has used blue gum plantings to establish shelter belts that increase farm productivity and, arguably, the aesthetics of the land. This farmer uses the annual lease payments from the shelter belts to cover the annual cost of fertilizer for the farm.

Some farmers are concerned that the establishment of plantations denies them the chance to expand by purchasing nearby blocks of land. An effect
of the land price boom has been an increased equity in the family farm that could enable greater borrowings, yet the statistics suggest this is not happening. No doubt farmers who struggle to service their debts are reluctant to increase their debts.

In regard to the tax incentives, it might be relevant to ask what other government scheme could encourage some 400,000 people to invest a total of $4 billion in agribusiness schemes in regional Australia, with a portion of that investment going into the pockets of rural Australians. This level of investment has occurred without any obligation on the part of investment managers to report on the annual return on investment, and the investors are exposed to many risks. So what has been the attraction? A recent National Australia Bank property forum revealed that a sharp rise in land values has now displaced farm production as the main earner in agriculture. Yet in most Managed Investment Schemes, the investor only owns the commodity (that is, trees) and the promoters often own the land. So the investors are not benefiting from the capital gains.

Another concern is that growth rates for the plantations are often well below the rates predicted in the original feasibility studies. While it is true that some plantations will achieve 300 tonnes per hectare by year twelve, the average will be nearer 150-180 tonnes per hectare, perhaps less if global warming reduces rainfall and increases average temperatures. The Executive Director of Treefarm Investment Managers Australia recently suggested that ‘because of vast advances in site selection, site preparation, genetics, fertilizer and weed control regimes’ more recently established plantations are performing better than the earlier ones. Yet in south-west Victoria, the shortage of suitable land is forcing plantation establishment further inland, where rainfall is less and the soils are less suitable. A recent dry spell has led to more tree deaths and it seems likely that average yields will drop as low as 120-150 tonnes per hectare, with some plantations no longer being economic to harvest. It has been suggested that carbon trading could increase the industry’s profitability, but that appears to be speculation only.

**Where to from Here?**

There is no doubt that as harvest approaches many new issues will arise. Many new jobs will be created (provided people with the relevant skills are available) and new investment opportunities will open up, such as proposed pulp mills or other associated industries. There are concerns about the carrying capacity of local roads to handle increased loads and about safety on the roads. The environmental impacts also need to be properly addressed with proper auditing to ensure that the industry acts responsibly in this regard.

If this particular investment in rural Australia fails it might be hard to encourage further investments in Australian agribusiness. Furthermore, the costs associated with such a failure might then be transferred to local farmers and ratepayers.
It is unlikely that the concerns associated with the industry can be addressed until at least one rotation has been completed. If this rotation is properly evaluated the impacts and the return on investment will be better understood and problems can be addressed to ensure a more sustainable industry. It might be possible to establish a better match between the species of trees used and sites selected, and to move towards the establishment of plantations for feature grade timber. Other value-added developments can be explored. There must be a role for hardwood plantations and farm forestry in the diversification of primary production.

This paper has not attempted to provide answers but rather to give a balanced assessment of the complex social, environmental, and economic issues surrounding the establishment of a new industry in rural Australia. No doubt some opportunities have already been missed and some issues have not yet been addressed. The benefits have probably been exaggerated, but so have the criticisms. However, the industry has been established and speculation can be replaced by the realities. The question must be: How can the benefits be further enhanced and the problems addressed so that the region gains a sustainable industry? People living in the region deserve to benefit from investments as much as our city cousins and our city cousins need to also take responsibility for the environmental impacts of primary production. People living in the cities should be encouraged to buy Australian and to direct their investments into areas that increase our mutual prosperity. Only greater investment can help us overcome major environmental concerns and ensure a quality of life for all Australians.

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