Socio-economic considerations for regional farm forestry development

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Summary
Farm forestry in Australia is increasingly promoted as a national strategy likely to deliver important benefits in terms of expanding opportunities for commercial wood production, assisting the move to more sustainable agriculture and enhancing regional development. While the benefits from farm forestry are often cited as social, economic and environmental in nature, there is little detailed analysis of the extent of the socio-economic benefits that will flow to regional communities. The authors argue that despite increasing interest by landholders, industry and government, it cannot be assumed that the benefits of farm forestry will necessarily be delivered to all stakeholders. As such, farm forestry development needs to be underpinned by adequate analysis of how regional stakeholders, particularly small-scale growers, are to benefit from farm forestry. In this paper the authors draw upon Australian and international experiences to present what they view as some of the key socio-economic considerations for regional farm forestry.

Introduction
Forestry is being redefined to meet a broad range of economic, environmental and social expectations (Sargent 1992; Kanowski 1995). As this happens, farm forestry is becoming an important element of forestry (Pearse 1994; Kanowski 1996). In Australia, farm forestry is increasingly promoted as a national strategy likely to deliver important benefits in terms of assisting the move to more sustainable agriculture, reducing the forest product trade deficit, and enhancing the viability of regions through industry development and employment (Commonwealth of Australia 1992; 1995). Despite its apparent potential to achieve gains in economic, environmental and social terms for individuals and the wider community (Robins et al. 1996), the importance of socio-economic factors is often underestimated or poorly understood (Curtis and Race 1995). Viable, self-sustaining farm forestry industries are yet to emerge in Australia (Race and Curtis 1996) and those involved in farm forestry development need to address important socio-economic issues operating at farm and regional scales.

In their review of socio-economic factors affecting regional farm forestry in Australia, Curtis and Race (1996) identified the key issues as:

1. Uncertain viability of farm forestry for growers and industry;
2. Poorly defined roles of growers, industry and government;
3. Little understanding of the potential socio-economic impact of farm forestry at the regional scale; and
4. Identifying and addressing socio-economic impediments to the adoption of farm forestry at the farm scale.

The authors have based the theoretical content of this paper on their recent assessments of farm forestry in Australia, which included a commissioned evaluation of the Department of Primary Industries and Energy’s Farm Forestry Program (Curtis and Race 1995) and an appraisal of the market links between small-scale growers and industry (Curtis and Race 1997). This paper is largely based upon international and Australian literature and aims to give readers a better understanding of the socio-economic context in which regional farm forestry is developing.

Potential of farm forestry
What is farm forestry?
The Department of Primary Industries and Energy (DPIE), which manages the Farm Forestry Program, defined farm forestry as ‘... the incorporation of productive tree growing into farming systems. Farm forestry can take many forms: woodlots, shelterbelts, alleys and wide-spaced tree plantings.’ (DPIE 1995, p.3). Similarly, the Western Australian Farm Forestry Task Force (FFTF 1995, p.ix) defined farm forestry as ‘... any commercial tree production on farmland.’ The authors have adopted a broad definition of farm forestry as a design concept that optimises the management of trees and shrubs integrated with agricultural systems for multiple products and services. Farm forestry therefore includes those private farm forestry activities related to the management of remnant native vegetation (e.g. as in Tasmania). Farm forestry also includes the activities of private rural landholders who manage trees and shrubs for multiple benefits while having minor agricultural production.

Why farm forestry is important
Farm forestry has the potential to provide substantial benefits to regions (McDonald 1993; FFTF 1995), principally in the form of reduced environmental costs by arresting land degradation (Powell 1995), diversifying farm incomes (Bird and Jowett 1996), and contributing to industry development (particularly if timber processing is completed) and its associated employment (Dwyer Leslie and Powell (DL and P 1995). Farm forestry also has the potential to be an important timber source contributing to import replacement: Australia currently has a balance of trade deficit of $2 billion of wood and paper products (Commonwealth of Australia 1995, p.1). Recent calculations by the Centre for International Economics (CIE) et al. (1996, p.1) indicated ‘The value of farm forestry to Australia could be $3.1 billion a year once a sustainable harvest is reached’. This calculation excludes the value of processing, which could increase the value of farm forestry to as much as $20 billion/year, employing 40,000 people (CIE et al. 1996, p.1). Based upon such calculations, Commonwealth, State and Territory governments are developing policies to support farm forestry (Donaldson and Gorrie 1996). Farm forestry could make an important contribution to expanding timber supplies and thereby reducing pressure on native forests in Australia and south-east Asia. Farm forestry using native species could also make a contribution to the protection of biodiversity by improving the quality of vegetation on farmland and supporting neighbouring high-value forest.
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conservation areas (eg. ecological buffer zones) (Sargent 1992).

The potential in Australia

Ryan (1994, p.25) noted that by the year 2001, the rapidly developing economies in the Pacific Rim will be facing an annual timber shortfall of 325 million m³, with an increasing deficit in world industrial timber supplies anticipated beyond the year 2010. From Australia’s perspective, the Pacific Rim region will provide considerable export opportunities (Ryan 1994). Implicit in these forecasts is a strong demand for farm forestry products because of increasing international demand for forest products. AACM et al. (1996, p.39) recently concluded ‘Commercial timber production has the potential to be a major new farm industry and thus provide for the diversification of farm income, particularly in areas with rainfall higher than 600 mm, where there is a processing facility close by.’

Plantations on cleared agricultural land can offer substantial commercial advantages over native forests for timber production by having a higher level of productivity, a more centralised resource with lower transport costs to processors, better control over timber quality, and better resource security (Resource Assessment Commission (RAC) 1992; Clark 1995). In Australia, about 1 million ha of marginal agricultural land is highly suitable for timber production (National Plantations Advisory Committee (NPAC) 1991, p.9). Further investigation found 286,700 ha of this land is suitable for hardwood plantations and is within a 100 km radius of existing processing facilities (RAC 1992, pp.263-4), suggesting the development of farm forestry is a realistic option for regional Australia (Industry Commission (IC) 1993). A more recent estimate suggests 350,000 ha of commercial trees could be established in Western Australia alone, representing 20% of the State’s total area suitable for commercial timber production (FFTF 1995, p.1). This information suggests the adoption of farm forestry can be increased. However, some commentators are more sceptical of the potential of farm forestry due to:

- Uncertainty of the timber quality of plantation hardwoods;
- Unproven commercial prospects for growers and industry; and
- Long period before financial returns to growers.

For instance, Barr and Cary (1992) concluded that the general enthusiasm for farm forestry may be driven more by the enthusiasm of foresters to establish trees on farms than the desire to see farmers exploit a proven commercial opportunity. Caution against the growing expectations of farm forestry is provided by some who suggest its benefits may have been ‘oversold’, particularly as many farms are univable today let alone in 20 to 30 years (Small 1994; Margules Groome Pöyry (MGP) (1995, p.93) also made a cautious assessment of the commercial opportunities for small-scale growers and noted:

...they cannot “see” success and only see government and large processing corporations, as very tough competition. This means a very long term investment is also high risk, with limited opportunities to optimise or even make a reasonable return on their investment.

Many of the uncertainties that confront growers about farm forestry also confront industry. For example, processors want some degree of certainty about supplies and markets, yet they must trade in competitive and fluctuating global markets. Even small-scale processors (eg. small hardwood sawmill) trading in regional markets can be affected by global issues. For example, world consumption of industrial timber is expected to increase over the next two decades, but this demand may not translate into timber sales given the political instability in many countries (Ferguson 1997). Minor changes in the economies of China and India have the capacity to alter world demand for wood products (de Fégely et al. 1997). Increased demand may not necessarily mean higher prices for growers, particularly small-scale growers in Australia. It is likely that increased demand will stimulate an expansion in the supply of forest products - potentially from countries with low labour and operating costs, and where environmental costs are discounted in favour of short term economic development. Such developments are likely to reduce the market competitiveness of small-scale growers and processors in Australia with higher cost structures. Also, de Fégely et al. (1997) noted that industry faces uncertainty because increased demand for timber may lead to technological developments which will allow:

- Processing of low-grade timber for high value products;
- Substitution with non-wood products; and
- Recycling (eg. old plywood into particleboard).

It is difficult to give accurate forecasts of farm forestry profitability due to its long term nature, regionally-specific opportunities and a limited number of long term case studies to draw upon. For instance, the economic opportunities of farm forestry can vary considerably within and between regions, due to differences in: species performance; quality and quantity of resource supply; continuity of supply; competitiveness of markets; the scale of industry processing; export potential; marketing options; and value of alternate landuse options. Clearly, if the viability of farm forestry within a region is uncertain, both landholders and industry will underinvest. There is still a need for in-depth regional analyses to assess the economic potential for a range of farm forestry options.

Regional socio-economic considerations

Joint ventures between growers and processors

Joint ventures between tree growers and timber processors are promoted as a way of sharing the burden of establishment costs and commercial risk, while maintaining part-ownership for both parties. As AACM et al. (1996, p.74) explained, landholders tend to be asset rich yet cash poor, requiring ‘...loans, joint venture investments or other cost-sharing arrangements to enable them to adopt commercial farm forestry.’ The diversity of existing and potential joint venture farm forestry arrangements in Australia have been well documented (Byron and Boutland 1987; Prinsley 1991a; Lyons 1993; 1994; Dunchev and Sinclair 1995; AACM et al. 1996). Developing a variety of joint ventures, particularly those which provided annuity payments to the landholder, is likely to be important in encouraging farm forestry adoption (Bond 1977; Spencer et al. 1989; Landsberg et al. 1990; Dunchev and Sinclair 1995; AACM et al. 1996). Spencer et al. (1989, p.113) reported ‘...share farming is a means of achieving plantation expansion targets without altering community structure or viability and with minimal negative impacts on local or municipal economies.’ FFTF (1995) also suggested joint ventures may enable farmers to avoid being bought out and so could avoid downward population trends in rural communities.

The view that farming joint ventures will yield equitable re-
wards to all parties has been challenged. These arrangements may create a dependent relationship between the landholder/grower and processor/buyer (Trainer 1989; Burch et al. 1992; Vancal and Lawrence 1995). Freudenberg and Grambling (1994) argued that multinationals buy resources on a very competitive world market with little obligation to contribute to the cash-exchange of a local area. There are considerable economic pressures facing industry, with processors needing to maintain and even reduce costs (Clark 1994). If such a situation develops in forest forestry, small-scale growers may become ‘price takers’ and have their profit margin squeezed by the more dominant corporate demands (MGP 1995).

The absence of competitive regional markets in many parts of Australia has been reported as a major disincentive to the adoption of farm forestry (Prinsley and Moore 1992). One response has been for tree grower cooperatives to form in Tasmania and Victoria to better coordinate disparate, small timber supplies and increase regional competition for forest products (Henderson and Leech 1994).

Contributing to regional development
The forest industry in Australia directly employs 40,000 people, which is similar to both the motor vehicle and iron and steel industries (IC 1993, p.49). Douglas (1977) and McDonald (1993) argued that forestry will generate positive changes to regional income, employment and trade. Lancefield Consultants (1995, p.4) estimated that about 75 people would need to be employed to establish, tend, harvest, and transport timber for every 10,000 ha of forest. The current plans by State forest agencies to increase their rates of afforestation by a combined rate of 20,000 ha/year would imply a substantial investment of about $70 million nationwide, every year (James et al. 1995, p.17). Where processing occurs (e.g. sawmilling, pulping), medium and large industrial operations have locally significant economic impact. For example, in Millicent - South Australia. 92% of the town’s manufacturing value was attributed to timber processing (IC 1993, p.48). Regional impact will be greatest where processing facilities do not exist or are of a small-scale, or where transport costs to existing processing plants in other areas are high.

However, the extent to which benefits will flow from increased adoption of farm forestry in Australia is not entirely clear. Mather (1993) reported that in the United Kingdom there is little evidence to support the view that afforestation has significantly helped to halt rural depopulation. A telling point made by Mather (1993, p.29) was that ‘Most of the afforestation-related employment in recent years has been in the form of mobile squads rather than local residents.’ Freudenberg and Grambling (1994) noted large-scale timber processing is highly mechanised and that employment for long-term local residents tends to be in low-level, low-skill positions of a ‘peripheral’ (non-essential) nature.

If farm forestry only supplements existing forest industries, then it may not create any appreciable increase in regional employment. James et al. (1995, p.25) predicted that increased afforestation and subsequent employment will most likely be concentrated in a few key regions. Fortmann (1994) also argued that simply increasing the level of forestry activity in a region (e.g. through adoption of farm forestry) will not necessarily improve the regional economy if the profits are not reinvested into the local community. Todd and Loane (1995, p.9) calculated that in Australia a regional farm forestry industry with 48,000 ha managed on a sustained yield could increase regional incomes by as much as $300 million per year, with 3,700 jobs created. However, most of this value depends on a large portion of the timber being processed in the region (Todd and Loane 1995).

A detailed study of the town of Oberon (NSW) concluded that an increase in timber processing, through expanding medium-density fibreboard (MDF) and sawmilling operations, had a considerable increase in employment and population growth within the district (DL and P 1995). For example, growth in plantation forestry had seen the town’s state government forestry employees grow from two in 1954 to ninety-five people (DL and P 1995, p.27). However, this increase in employment was in part attributed to an increased proportion of lower wage employment (DL and P 1995). The net result of the expanding forest industries, particularly timber processing, for Oberon appeared to be positive, with:

- Increased economic prosperity for a range of local businesses;
- Past residents returning to the town due to improved employment opportunities;
- Increased employment opportunities for women;
- Added employment opportunities for farming families; and
- Improved economic performance of the town which led to improved health, educational, and social services (DL and P 1995).

The stability of farming communities is affected by change in the enterprises within it, including: changes in the number and size of farms; specialisation within farming enterprises; mechanisation of agriculture; marketing practices; farm labour requirements; and changes in the terms of trade. Where populated farmland is replaced by less-populated forestry, Spencer et al. (1989) reported that industrial forestry has raised concerns amongst rural communities that it may contribute to depopulation of rural areas in Australia. Depopulation of small agricultural communities can accelerate community disintegration when populations fall below the critical thresholds to support shops, schools, hospitals and other community services (Corcoran and Dent 1994). Under these circumstances, small towns become less attractive for the younger generation or retirees.

It is difficult to generalise about the likely support for forestry, including farm forestry, amongst rural communities without adequate socio-economic assessments. Fortmann (1994) highlighted the need for community-initiated, regionally based planning and management that investigates the socio-economic and environmental aspects of resource development. If significant benefits are to flow to rural communities, farm forestry needs to involve timber processing, particularly those stages which add most to the value of forest products.

Objections to change in land use ‘... tend to diminish over time, especially if there are tangible financial and environmental benefits’ (Eckersley et al. 1993, p.17). Unlike large scale industrial plantation forestry, farm forestry may increase the supply of quality timber without having to greatly alter current farming practices (Shea and Hewett 1993). Therefore, it could reasonably be expected that well integrated farm forestry is likely to contribute to a more ready acceptance of forestry as an alternate landuse in agricultural areas (NPAC 1991).
Defining the roles of growers, industry and government

While farm forestry development in Australia is in its infancy, the roles of growers, industry and government remains poorly defined. There is uncertainty in the role of: growers in how best to ensure competitive regional markets emerge (e.g. developing grower cooperatives); industry in how best to ensure secure supplies of adequate quality and quantity wood fibre remain available (e.g. optimum joint ventures); and government in how best to catalyze in regional farm forestry development (e.g. supporting education and training, market information). Joint venture investments between growers (receiving annuity payments) and processors (improved resource security) appear to offer advantages to both parties.

Emerging grower cooperatives may also prove to be effective in securing good prices for small-scale growers. However, the long term measure of success for grower cooperatives will be the extent they can negotiate better prices for growers. Improved access to neighbouring regional markets and overseas can improve the market power of grower cooperatives. Grower cooperatives could also assist industry by coordinating supplies to allow industry to negotiate with a ‘single’ grower, rather than with numerous disparate small-scale growers. However, if a grower cooperative is unable to negotiate with processors in competitive markets, they are unlikely to succeed. Alternatively, the New Zealand example of small-scale growers commissioning brokers to negotiate prices on competitive regional and international markets is an example of what might be possible in Australia (Race 1994).

Socio-economic considerations at the farm scale

Background

Integrating forestry with agriculture will require people to alter their farming practices. Effecting behavioural change is often a complex, time consuming task, particularly if government and industry rely upon voluntary adoption of new technologies, as in Australia. If innovations are expensive, unproven, complicated or contrary to accepted farming ways, adoption of new technologies can be lower than anticipated. In these circumstances, efforts to effect voluntary behavioural change will need to address the underlying reasons of non-adoption (Vanclay 1992).

Socio-economic factors relevant to the adoption of farm forestry at the farm scale include:

- Increased time and financial commitments required for managing the new enterprise;
- Landholder uncertainty about market risks;
- Landholder concerns about entering into long term joint ventures;
- Complexity of decision making for landholders;
- Farming family dynamics (e.g. intergenerational transfer of farm, number of dependants); and
- Target audience segments (e.g. full-time farmers, small-scale part-time farmers) and the relevant social characteristics of landholders (e.g. age, education).

Landholders concerned about increased time and financial commitments, market uncertainty, and potential benefits of long term joint ventures have been discussed. The remaining topics are briefly discussed below.

Decision making by landholders

Many landholders believe farm forestry is a high risk enterprise because of high establishment costs; uncertain returns; a lack of unbiased and locally-relevant information; limited technical and educational assistance; problems of managing livestock amongst trees; and the belief that the farm already has enough trees (Prinsley 1991b; Lawrence and Hardesty 1992; Lawrence et al. 1992, Curtis and Race 1995; Wilson et al. 1995). Although industry and governments provide financial incentives to encourage adoption of farm forestry, these seldom cover the full costs and risks borne by farmers. Even when landholders agree with the technical information given to them about the benefits of farm forestry, they may not be in a position to practice farm forestry. Vanclay (1992) suggested that farmers often have conflicting ideas to those of technical advisers about the use of their time, capital, priorities at different stages of life and the ideal ways to manage their farm. In times of uncertainty (economic or otherwise), farmers may wish to maintain flexibility, and so are less inclined to make long term investments (e.g. 10-30 years) in enterprises such as farm forestry. Often the most sensible decision from a farmer’s perspective is not to adopt farm forestry.

Farm family dynamics

Farm family dynamics may constrain or encourage adoption of new practices (Rogers and Salamon 1983; Munton et al. 1992). Those promoting farm forestry need to appreciate that farm family decision-making is a political, economic and social activity (Bryant 1992). The relationship between farming and the farm family is closely interactive, especially with the ability of a family farming enterprise to alter its expenditure and internalise capital and labour costs (Errington and Gasson 1994). Access to family labour for planting, pruning or thinning, may assist the adoption of farm forestry by keeping cash outlays to a minimum. Farm family dynamics which may affect the capacity of a farming business to change or diversify farm production, include: family size; the age and number of dependants in a family; inheritance arrangements; and the amount of off-farm employment.

Diversity within target audiences

Landholders in Australia are far from being a homogenous social group and those developing farm forestry need to understand that rural communities are typically heterogeneous. Audience segments relevant to farm forestry in Australia include: part-time/full-time farmers; farming women; younger/older farmers; migrant families; and farm families/corporate farmers.

Differences in farm enterprise type, property area, landholder age, extent of off-farm employment, geographic region, and participation in community groups have been reported to affect landholder willingness to enter different grower-industry arrangements (Dunchue 1990; Reid and Stewart 1994; Dunchue and Sinclair 1995). For example, older farmers were more interested in ‘lease’ arrangements with processors, where their physical demands are reduced and they can remain on the farm with an income (Dunchue and Sinclair 1995). In the USA (Matthews et al. 1993) and the UK (Perkin and Rehman 1994) younger farmers, who tend to be higher educated, were reported to be more willing to explore non-traditional farming practices.

Conclusion

Farm forestry in Australia is promoted as having the poten-
Green Triangle, Tasmania and Western Australia. Report for Joint Venture Agroforestry Program, Rural Industries Research and Development Corporation: Canberra.


