FARMER AND LANDHOLDER CONTRIBUTIONS TO AUSTRALIA'S COMMERCIAL PLANTATIONS.

Nick Stephens
National Forest Inventory, Bureau of Rural Sciences, PO Box E11, Kingston, ACT, 2604
Mellissa Wood
National Forest Inventory, Bureau of Rural Sciences
Belinda Allison
National Forest Inventory, Bureau of Rural Sciences
Claire Howell
National Forest Inventory, Bureau of Rural Sciences

Abstract

In Australia almost all of the cleared land available for forest expansion is privately owned and managed by farmers and landholders. In 1999, ninety per cent of new plantations established were on private land and by private tree owners. The level of forest expansion in Australia therefore depends, to a large extent, on the decisions of private landholders to integrate forestry into current landuse practices, or in some cases, to instigate a change in lifestyle and landuse through the outright sale or lease of their land to commercial forest companies.

Until now, limited knowledge has existed on the extent to which farmers have adopted farm forestry, or contributed to forest development at the national level. This has resulted in limited recognition of the important role farmers have had in plantation development in Australia and the contribution of small-scale grower resources to the overall plantation estate.

In 1998 the Commonwealth Farm Forestry Program committed 3 years funding to BRS to establish the National Farm Forest Inventory (NFFI) - to facilitate the collection of farm forest resource information and report on the extent of farm forest resources across Australia. After working for two years in coordination with a national network of regional farm forestry groups, the NFFI, in November 2000, requested from the network statistics on farm forest resources. In response the NFFI received over 40 disparate datasets, detailing the species, age, size and location of individual farm forest stands, totalling over 65,000 hectares. Key findings were that a significant upward trend in farm forest establishment has occurred over the past 5 years and that plantation companies have also formed agreements with individual landholders to secure land for development of larger scale commercial plantations.

Introduction

Farmers and other landholders contribute to commercial plantation development in a number of ways. They include landholders establishing small plantations (or woodlots) on their own land; landholders providing land to plantation companies through joint venture or lease arrangements; and landholders providing skills, machinery and labour in the development of plantation projects. However, 'landholder contribution' in this paper only refers to their participation through the provision of land, either by planting their own land with commercial trees, or by providing land to other parties, to produce a commercial tree crop.

Australia has a long history of plantation development, commencing in the late 1800's. By the early 1900's all States and Territories had strategic trial plantings, principally of softwood species. Most of these early plantings were by State forest agencies on public land and they were successful in identifying a small number of superior species. Subsequent large scale plantings were also initially mainly by States, followed later by a small number of large, private forest processing companies on private owned land and leased public land. There were also sporadic bursts of plantation investment on private land driven by tax minimisation schemes, but until recent times the overall levels of private investment were low. For example, of the remaining plantation estate planted between 1960 – 69, only ten per cent is known to be privately owned (Wood *et al*., 2001a).

During the 1990's significant government and industry based initiatives were developed to remove impediments to plantation development and in particular encourage greater private investment in plantations, for example, the Wood and Paper Industry Strategy (Commonwealth of Australia, 1995), and the '2020 Vision' (Plantation 2020 Vision Implementation Committee, 1997), (Wood *et al.*, 2001b). These programs, together with the privatisation of government-owned plantations and major drivers such as tax investment schemes, have produced a clear shift from predominantly public to predominantly private investment in plantations. Increased private ownership, and State and Territory policies of not clearing of native forests (NFPS, 1992), has resulted in the majority of new plantations, in the last decade, being established on cleared agricultural land.

Plantation ownership

Plantation ownership arrangements have become more diverse over recent years. This is partly due to recent State legislation that allows for the separation of land and tree ownership (for example, Forestry Rights Act 1996), plus the advent of leasehold and joint venture schemes which enable two or more parties to combine land, capital and other resources to produce commercial tree crops. Leasing schemes have been popular with farmers wanting to enter into forestry as the costs associated with plantation establishment and management are usually met by industry or government. In return for providing their land, farmers receive a proportion of the plantation profits and/or an annual fee. Such schemes help satisfy the needs of those plantation companies and agencies wishing to secure land without purchasing property's and also provide supplementary or mainstream income to landholders. Curtis and Race (1998) have described the numerous benefits of leasehold and joint venture schemes to both farmers and growers.

Despite the important contribution of plantations to the Australian forest products industry, the monitoring of ownership trends until recently has been limited. This reflects the simplicity of earlier ownership arrangements, where the State agencies and a small number of large industrial players owned the majority of plantations. Under these arrangements State agencies usually collected plantation statistics on behalf of all growers, which could be amalgamated to produce national statistics. This situation changed in 1997, when Australia's first comprehensive National Plantation Inventory was prepared (NFI, 1997) to meet new industry and government requirements. The report provided plantation statistics for 15 wood supply regions, but no ownership information was included. This omission was due to a number of reasons, particularly a competitive environment that had developed between growers, many of whom were reluctant to have such information published, as well as it being too early to appreciate the rapid shift in ownership trends.

Following the first NPI in 1997, there was growing recognition of the need to capture information on smaller grower plantations as part of future inventories. This information is required for policy, industry and reporting purposes. To this end, the NFFI was established in 1998 to facilitate nationally consistent data collection and reporting on all farm plantations, with the ultimate aim of incorporating it within the NPI.

Due to the evolving complexity of ownership, in 2000 the NPI developed two ownership types, which distinguished between ownership of the land and ownership of the trees. In addition to the public and private classes for each type a 'joint' class was used for tree ownership, defined as both public and private parties having some equity in the tree crop (Table 1). On this basis, the NPI reported tree ownership for the 1999 plantation estate was equally distributed been public and private, with an additional 8% (107,000 ha) held in joint ownership between public and private entities (NFI, 2000). A limitation of this classification system was that it did not identify the level of joint ventures occurring between private companies and private landholders.

This limitation was addressed in the development of a new reporting framework which allows for the integration of the NPI and NFFI and identifies a variety of tree and land ownership arrangements. This new reporting framework enables unique sectors of the plantation resource to be identified and quantified, which include a number of sectors where farmers and other property owners play a direct role.

Table 1: Ownership categories developed by the National Plantation Inventory, 2000.

Land ownership	Tree ownership	Description
public	public	*State agency owning trees on crown land*
public	private	*Private company owning trees on crown land*
public	joint public and private	*Joint Venture ownership of trees between State agency and private company on crown land*
private	public	*State agency owning trees on private land*
private	joint public and private	*Joint Venture ownership of trees between State agency and private company on private land*
private	private	*Private tree ownership on private land in either an outright, leasehold or joint venture arrangement*

A reporting framework for farm forestry.

The NFFI was instigated after a pilot study to identify appropriate methods for collecting farm forest resource data. Due to the large number of individual owners and the scattered distribution of farm forests it was determined that data collection should occur through a national network of regional farm forestry groups (Sun *et al.* 1998). The core of this network resulted from a major initiative of the Commonwealth Farm Forest Program to support the establishment of Regional Plantation Committees (RPC's) throughout Australia. In addition to RPC's, the NFFI network includes about 45 additional representatives from regional tree grower groups, cooperatives, non government associations and State agencies. These groups have close ties with regional growers and a strategic interest in collating regional resource information for their own purposes.

During 1999, as the NFFI begun to establish formal links with appropriate regional and State groups, a need emerged to more clearly define the 'farm forest' sector for which data was to be collected and reported. It was especially important to ensure that the NFFI and NPI did not duplicate data collection efforts. This led to the definition of the NFFI project as the collection of data 'on those plantations outrightly owned by individuals with a total plantation estate of less than 1000 hectares'. Although this definition of plantation farm forestry excludes some enterprises, for example, joint ventures, it more clearly targets the sector where facilitation and encouragement of data collection is most needed. This definition also integrated well with the plantation sector the NPI was collecting data on and ensured a total coverage was achieved.

In June 2000 it was recognised by the NFFI Steering Committee that reporting on the small grower sector alone by the NFFI did not adequately capture all types of farm forestry. There was a need to capture data on a wider number of landholders undertaking plantation development, particularly those occurring through partnerships with industrial growers. As a result, the NPI undertook to identify that portion of the industrial sector established through partnerships with landholders, by requesting industrial plantation owners to identify the percentage of their plantation area under leasehold, joint venture and outright ownership of trees and land (see definitions).

This approach recognises particular sectors of the plantation estate and allows each sector to be quantified from a resource perspective, as well as providing a gauge to the level of landholder participation in each sector. Because farm forest plantations occupy a range of scales (figure 1), and have a range of outcomes farm forestry activity was captured through both the NFFI and NPI, by:

1. NFFI data collection focusing on the small grower sector, ie plantations owned outright and established by individuals (zone 1 on figure 1);
2. The NPI, while focussing on industrial plantations, requesting data from all industrial growers on the percent area, of their plantation estate under leasehold and joint venture (zone 2 of figure 1).

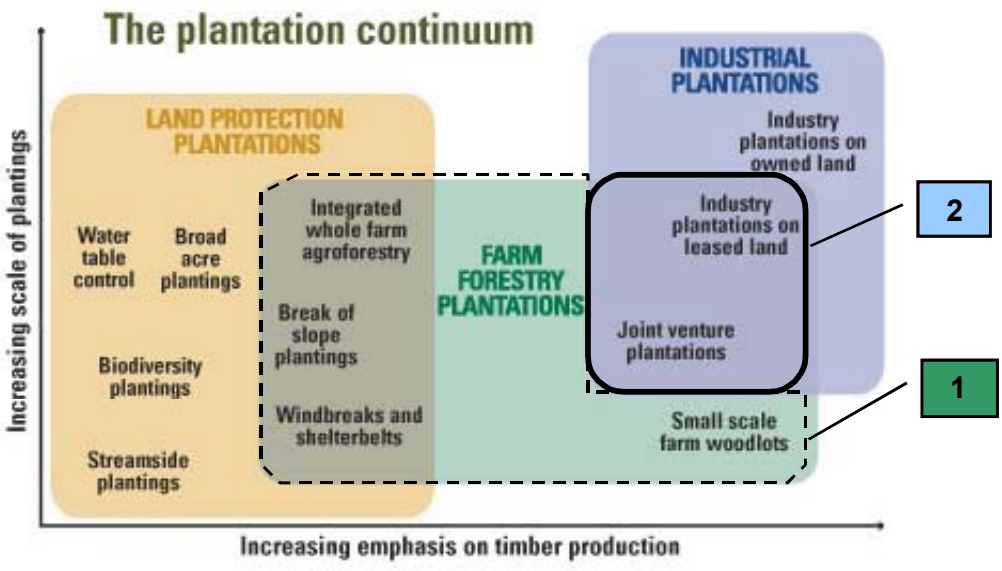

Figure 1. The plantation continuum

Results from Plantations of Australia 2001.

1. The small grower estate:
The NFFI identified 67,000 hectares of small grower plantations. These plantations represented approximately 5% of Australia's plantation resource of 1.485 million hectares (as at September, 2000).

Hardwood species make up the majority of the small grower plantations, with 33,510 hectares (50 per cent) being single species stands, plus an additional 8,190 hectares (12 per cent) of predominantly mixed species stands. Softwood species comprise 24,340 hectares (36 per cent) of the total. Eucalypt species dominate the hardwood sector, particularly *Eucalyptus globulus,* which totals 13,100 hectares and comprises 39 per cent of the single species hardwood resource and *E. nitens,* which totals 9,300 hectares or 28% of the single species total. These two species are also highly represented in the industrial sector, as recorded by the NPI. Other major eucalypt species of the industrial sector include *E. pilularis, E. grandis, E. dunnii* and *E. regnans,* but these are not highly represented in the small grower resource. Instead species such as *E. camaldulensis, E. cladocalyx, E. saligna, Corymbia maculata* and the oil mallee eucalypts in Western Australia occur in higher levels. This is due to a number of reasons, such as alternative markets being sought and different geographic regions being planted.

Although the area of small grower plantations has steadily increased since 1970, farm forestry is still in its infancy in Australia. Plantings during the 1970s and early 1980s were dominated by softwood species, mostly *P. radiata*. However, the level of hardwood establishment nearly quadrupled from 2,040 hectares during 1985–1989 to 7,980 hectares during 1990–1994. The first widespread establishment of hardwood plantations in the farm forestry sector occurred in Tasmania and Western Australia in the late 1980s. This coincided with the start of major industrial hardwood plantation developments in these States.

The area of small grower hardwood plantations continued to increase from 7,980 hectares during 1990–1994 to 19,480 hectares during 1995–1999. This resulted from continued strong growth in Tasmania and Western Australia and increasing interest in other States especially the Green Triangle region of SW Victoria/SE South Australia, North East Victoria, and Northern Queensland (see Figure 6 for RPC map). In contrast, softwood plantation establishment rates reduced over this time after peaking at 3,850 hectares in 1975–1979. More than a third of the current total small grower resource has been planted since 1995. Table 2 shows the current State totals.

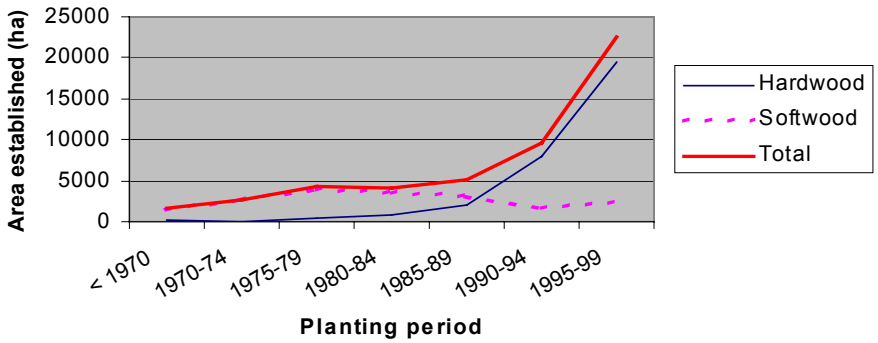

Figure 2. Small grower plantation establishment rates in Australia

Table 2: Areas of small grower plantations (hectares)

State	*Hardwood*	*Softwood*	*Mixed* [1]	*Unknown*	*Total*
NSW	388	3,881	2,698	915	**7,862**
NT	15	0	29	0	**44**
QLD	253	378	2,660	0	**3,292**
SA	2,021	3,367	718	0	**6,106**
TAS	11,700	4,400	0	0	**16,100**
VIC	7,584	11,467	2,002	33	**21,086**
WA	11,542	850	104	0	**12,496**
TOTAL	**33,504**	**24,343**	**8,190**	**948**	**66,983**

1 - mixed contains predominantly group plantings of mixed hardwood species

Additional information on national programs relevant to the establishment and monitoring of species and management trials is also contained within the Plantations of Australia report.

2. Joint ventures and leasehold:

The NPI identified that 20 per cent (293,000 hectares) of Australia's industrial plantation area was established on either leased land or through joint ventures. Thirteen per cent of the industrial resource, approximately 189,000 hectares, is on leased land. This is land made available to a forest grower in exchange for a regular payment, where the grower has sole primary production and access rights to the trees. A further seven per cent of the industrial resource, approximately 104,000 hectares, has been established through joint ventures where both parties have shared equity in the final product. The NPI also identified that 61% of the industrial resource, or 858,000 hectares, is on land purchased outright by industrial growers.

In total, the 3 components in which farm forestry occurs (ie small growers, leasehold and joint venture), accounts for at least 25% of the total plantation estate (Figure 3). It should be noted, however, that leasehold and joint ventures may not always include individual landholders. For example, where a private company leases public land or is in joint venture with another State agency.

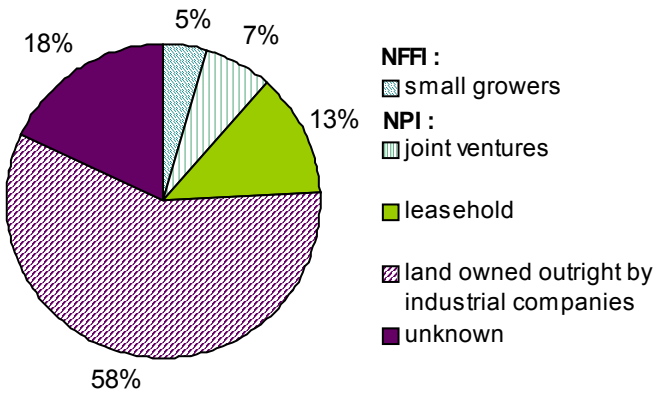

Figure 3. Percent areas of identified sectors within Australia's plantation estate

Number of landholders involved.

1. Small growers:

Quantifying the number of landholders involved in small grower plantations was not an objective of the NFFI and as such was not recorded in the core dataset. The database includes only resource parameters, including species, area, location and year of planting. However, the manner in which data was provided to the NFFI from some regions provides some insight into the number of landholders involved in plantation development. These are described in the following two case studies.

Gippsland Case Study, Victoria

According to data provided by the RPC, Gippsland Farm Plantations, small growers manage 6,970 hectares of plantation. These are comprised of 520 individual stands in 267 individual ownerships. Approximately 40 per cent of growers have up to five hectares (Figure 4), and there is a generally linear reduction in the percent of growers with larger holdings, made up of one or more stands. The median holding size is 8.8 hectares.

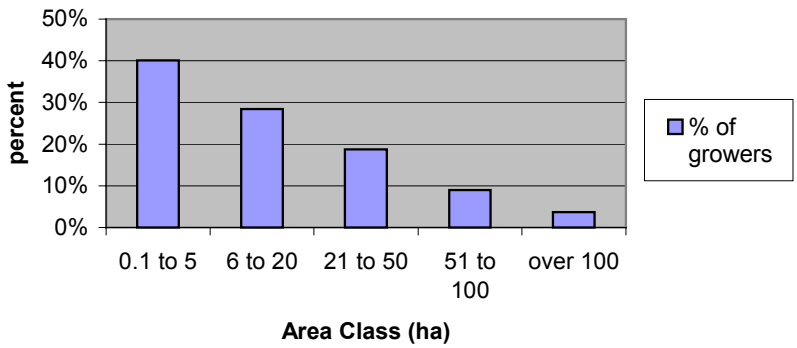

Figure 4. Percent holdings of plantations of different sizes in Gippsland region

Green Triangle Case Study, Victoria/South Australia

Data provided to the NFFI identified a total of 5,548 hectares of small grower plantations in the Green Triangle region of Victoria and South Australia. A subset of data provided, covering 4,792 hectares, identified 583 individual stands and 298 individual growers contributing to the resource. Assessment of plantation holdings (Figure 5) shows that nearly 60% of growers in this region have up to five hectares, resulting in a smaller percent of growers with larger holdings compared with Gippsland. This is reflected in a lower median value (3.4 ha) of holdings per small grower in the Green Triangle RPC region.

Using five hectares as a best estimate of the national average holding suggests that approximately 13,400 landholders contributed to the NFFI.

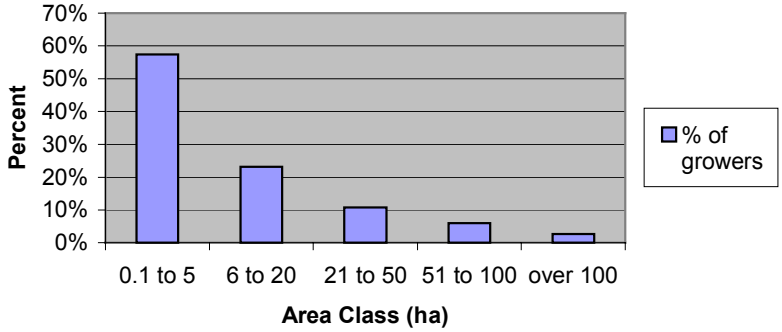

Figure 5. Percent holdings of plantations of different sizes in Green Triangle RPC

2. Joint ventures and leasehold

A total of 293,00 hectares, representing 20 percent of the total resource, was identified as either joint venture or leasehold plantations. Leasehold and joint venture schemes, therefore, have been utilised as an important mechanism for plantation expansion to occur on cleared agricultural land. A significant proportion of this amount (approximately 125,000 hectares) accounts for arrangements exclusively between industrial and/or government parties and does not involve landholders, such as the leasing of public land by private plantation companies. Although the number of landholders participating cannot be accurately quantified, the remaining 168,000 hectares can be used to provide an estimate. Assuming an average holding of 40 hectares[1], results in approximately 4,200 landholders involved in various partnership arrangements with government or industry to produce plantation timber.

Implications for forestry extension

Data collection activities and findings of the NFFI and NPI have direct links to the provision of forest related information throughout Australia. They provide statistical data that underpins an improved understanding of existing plantations for industry and regional planning, and foster networks that encourage coordination and wider interest in farm forestry. From an extension perspective benefits include:

- Identifying regional networks: the NFFI has established strong links with many small grower representatives across Australia. These groups have a strategic focus on regional development and could be involved in extension activities in their respective regions.
- Understanding the regional profile: accurate, current resource information enhances understanding of what growers are planting with respect to species, size, age and location, the number of landholders involved and potential products. This information is important for cooperative planning and marketing and could influence the type and quality of extension provided.
- Identifying players and stakeholders: NPI data shows that 20 per cent of the resource is established through joint venture and leasehold schemes. Under such schemes industrial growers often form partnerships with landholders to secure land. New opportunities could exist for extension services to be provided to farmers by industrial forest managers through such partnerships and possibly built into contacts between both parties.

(1) 40 hectares is the average area of stands established under State Forests of NSW joint venture softwood program (H. Dunchue pers.comm.) and represents a minimum area for other plantation companies offering joint ventures.

Conclusion

A national reporting framework has been established that clearly identifies and estimates the plantation resource within different plantation sectors. The NFFI focuses on the small grower sector and the NPI, while focusing on the industrial sector, identifies that portion of industrial plantations which include joint venture and leasehold schemes.

The small grower sector totals approximately 67,000 hectares, representing approximately five per cent of the national plantation resource. In addition, at least 20 per cent of the resource, or 293,000 hectares, has been established through joint venture and leasehold arrangements, of which 168,000 hectares is estimated to involve landholders. Using available information it is estimated that 13,400 small, private landholders contribute to the small grower resource and an additional 4,200 landholders are involved in farm forestry through joint venture and leasehold schemes with industrial growers.

Timely and useful resource information, at a scale that is relevant to planning, provides important benefits to regional farm forestry groups for strategic planning, marketing and attracting regional investment. The framework developed for farm forestry reporting addresses the complexity of current plantation development and the options landholders have for being involved in farm forestry activities. Inventory outputs are being used to develop clearer regional profiles and can assist in developing better designed and implemented extension programs.

Definitions

According to the NPI data request industrial plantation managers were asked to provide a percentage breakdown of their plantation estate under leasehold, joint venture and outright ownership according to the following definitions:

1) leasehold - leased land where you have the sole primary production and access rights of the trees
2) outright – outright ownership of the trees and land
3) joint venture - joint ownership of the trees with another party (both have some equity - this does not have to be equal but each party has a greater than 10% share).

Postscript

Officers the National Forest Inventory Program, within the Bureau of Rural Sciences, AFFA, manage the NFFI and NPI projects. Data was collected at a regional level by plantation grower representatives and representatives of farm forestry development groups, such as Regional Plantation Committees. A variety of methods were used to collect the regional data, including landholder surveys, field visits and compilation of historical records. The NFFI only requested figures on those farm forest stands that are managed primarily for commercial intent.

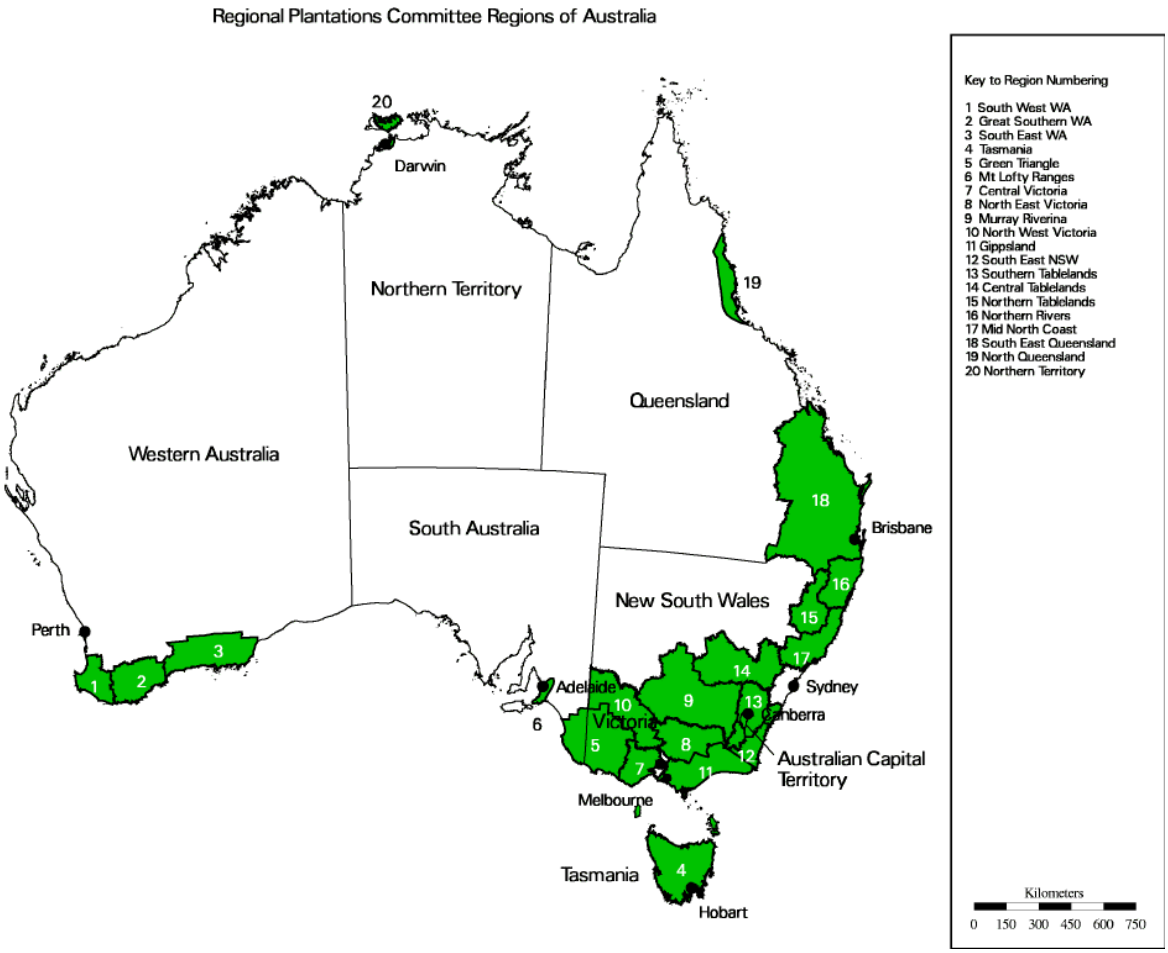

Figure 6. Regional Plantation Committee regions of Australia.
Note: some regions do not have a formally recognised Regional Plantation Committee

References

Commonwealth of Australia (1992) *National Forest Policy Statement: A New Focus for Australia's Forests*, Canberra.

Commonwealth of Australia (1995) *Wood and Paper Industry Strategy*, Forest Taskforce, Canberra.

Curtis, A. and Race, D. (1998) *Links between Farm Forestry Growers and the Wood Processing Industry: Lessons from the Green Triangle, Tasmania and Western Australia*, A report for the Rural Industries Research &Development Corporation, Canberra.

National Forest Inventory (1997). *National Plantation Inventory of Australia*. Bureau of Resource Sciences, Canberra.

National Forest Inventory (2000). *National Plantation Inventory Tabular Report – March 2000*. Bureau of Rural Sciences, Canberra.

Plantation 2020 Vision Implementation Committee (1997). *Plantations for Australia – The 2020 Vision.* Department of Primary Industries and Energy, Canberra

Sun, D. Hnatiuk, R. and Hansford, M. (1998). A pilot study to identify ways for conducting a national farm forest inventory in Australia. *Australian Forestry* 61(3): 185-189.

Wood, M.S., Stephens, N.C., Allison, B.K., and Howell, C.I. (2001a). *Plantations of Australia – A report from the National Plantation Inventory and the National Farm Forest Inventory*. National Forest Inventory, Bureau of Rural Sciences, Canberra.

Wood, M.S., Howell, C.I., Spencer, R.D., and Allison, B.K (2001b). *Australia's Changing Plantation Landscape.* Proceedings 16th Commonwealth Forestry Conference, Fremantle, Western Australia.