5 Plantations

5.1 PLANTATION EXTENT

According to the National Forest Inventory (1997), the South-West Forest Region had 148 000 hectares of plantations in 1995. This consisted of: *Pinus radiata* (42%), *Eucalyptus globulus* (34%), *P. pinaster* (19%) and minor eucalypt species (5%) (see Table 5.1).

Table 5.1 Western Australian plantations species and area (ha)

Regional Total	*E. globulus*	Minor eucalypt species	Hardwood Total	*Pinus radiata*	*Pinus pinaster*	Softwood Total
148 000	50 280	6770	57 050	62 740	28 250	90 980

Source: NFI (1997)

The rate of plantation establishment for *E. globulus* has been exponential, with an increase of 20 400 hectares being reported in 1996 (CALM 1997e) and another 20 000 hectares planted in 1997. The area of softwood estate remains largely unchanged with an increase of 464 hectares in public plantations and an increase of 905 hectares in private plantations. There was no reference to the area of private plantations clearfelled.

5.2 PLANTATION OWNERSHIP

From CALM and NFI data, Western Australia's plantations are approximately 58% publicly owned and 42% privately owned.

Statistics on the total area of State-owned softwood plantations and the total area of State-managed hardwood plantations are presented in Tables 5.2 and 5.3 respectively.

Table 5.2 Area of State-owned softwood plantations as at 31/12/96 (ha)

Regional Total	*Pinus radiata*	*Pinus pinaster* (and other species)
70 758 (8223)	44 245 (7262)	26 513 (961)

Source: CALM's Annual Report 1996-1997

Note: Areas shown in brackets have been established under sharefarm agreements. They are included in the totals.

Table 5.3 Area of State-managed hardwood plantations as at 31/12/96 (ha)

CALM-owned		CALM-managed		Total		
E. globulus (ha)	Other eucs (ha)	*E. globulus* owned by other Govt agencies (ha)	*E. globulus* Privately owned (ha)	*E. globulus* (ha)	Other eucs (ha)	Total State-managed hardwood
7617 (7473)	**6736 (17)**	**1124**	**12 933**	**21 674**	**6753**	**28 427**

Source:CALM Annual Report 1996-1997

Note: Areas shown in brackets have been established under sharefarm agreements. They are included in the totals.

5.3 PLANTATION POTENTIAL

During the 1980s CALM developed policies to encourage the development of treecropping of *E. globulus* and *Pinus radiata* on agricultural land (Shea and Hewett 1997). Both CALM and the private sector now have extensive *E. globulus* hardwood plantation programs in place and further increases in the size of the plantation estate are expected. Pulpwood production from new Western Australian plantations has attracted considerable interest from overseas investors. Table 5.4. shows the total areas and production rates of these plantations. Some figures presented (shaded) are speculative.

Table 5.4 Current and potential interests in developing plantations in Western Australia

Company	Agent	Production tonnes/year	Total area (ha)
Albany Plantation Forest Co. (Oji/Itochu/Senshukai)	CALM	500 000	20 000
Collie Hardwood Plantation (Hansol Forest Products)	CALM	500 000	20 000
Bunbury Tree Farm Project (Nippon Paper Industries-Mitsui and Co)	CALM	500 000	20 000
Sub-total pulpwood plantations managed by CALM		1 550 000	60 000
Sharus	Self	100 000	7000
Taiwan (through Austrade)	Current inquiry	1 000 000	40 000
USA (through Austrade)	Current inquiry	500 000	20 000
Total all overseas companies		2 850 000	117 000
Wesfarmers Bunnings	Self	3 000 000	100 000
Others – Prospectus promoters and independent investors, say:	Self	1 250 000	50 000
Total prospects all companies		**7 350 000**	**277 000**

Source: Lancefield Consultants (1995)
Note: Volumes and land areas are nominal (shaded areas include speculative figures).

CALM has also launched a plantation development program for maritime pine (*Pinus pinaster*) on cleared agricultural land in the 400mm to 600mm annual rainfall zone and sandy soils in the higher rainfall zone. The first 9600 hectares of *P. pinaster* were established on farms in 1995 and 1996. This was increased to 1300 hectares in 1997, and the proposed annual rate of establishment is 15 000 hectares by the year 2000. CALM's target is to establish up to 150 000 hectares within 10 years—the potential land area suited to *P. pinaster* in Western Australia has been estimated at three million hectares.

Availability of land

The suitable region for *E. globulus* plantation development extends from south of Perth to east of Albany. The 600mm rainfall isohyet had been assumed to be the limit of commercial tree growing (Meagher 1993). However, according to Shea and Hewett (1997) it is expected that commercial growing of *P. pinaster* can occur as a farm forestry crop in the 400mm to 600mm zone. Soil depth, texture and fertility are also important factors in determining tree growth and suitability for individual plantation species (Meagher 1993).

According to Meagher (1993) 25% of the 1.8 million hectares of freehold land in the region is uncleared. This is not proposed to be cleared, so 1.45 million hectares of the region is potentially available for tree planting. Approximately one third of this area (about 500 000 hectares) could conceivably grow *E. globulus* at returns that are competitive with agriculture.

Plantation capability study

A plantation assessment project is currently underway. This project will provide a further basis for considering the potential of the RFA region and adjacent areas to provide wood for industries now and into the future. The assessment involves identifying the current plantation information through the National Plantation Inventory and CALM's database. The assessment will follow a review of existing information. The focus will be on broad plantation capability for cleared land within the region that can be interpreted for a range of species. Recent soil mapping by the Department of Agriculture provides opportunity to refine existing capability information and provide a seamless spatial database for the study area. As the results of this new plantation capability work will not be available for this report, they will be made available separately.

Cost of land and other factors determining plantation potential

Land value maps are available for the region. Land values vary widely, depending on existing uses, rainfall, soil types and distance to particular towns. In order to evaluate land for plantations it is also necessary to consider location relative to processing centres/export facilities and plantation productivity. Suitable land should be available at an acceptable cost (Meagher 1993). In most cases there are other benefits of establishing plantations on farmland. The combined benefits need to be used when evaluating their viability.

It should be noted that plantation potential referred to here includes broad indications of suitability based on social and economic factors. A large number of factors can determine the plantation potential of land. Meagher (1993) lists several factors (see Table 5.5).

Table 5.5 Determining factors for plantation potential

In summary the principal factors are:

1. The value of native hardwood increasing sufficiently in price to ensure replacement by plantation softwood in the structural timber market.
2. Expected demand relative to the supply of timber products in Western Australia.
3. Anticipated or pre-negotiated price for plantation products at the time of harvest.
4. New plantation estates being large enough to under-pin, new or expanded processing plants.
5. A demonstrated or adequately perceived excess of revenue over costs, sufficient to attract the necessary investment funds.
6. Availability of agricultural land capable of growing marketable wood at suitable growth rates (not all agricultural land in the appropriate climatic zone is capable of production).
7. Cost of land relative to its location and productivity
8. Proximity of suitable and available land to markets and/or ports.
9. Plantation estates being staged at suitable age/size classes to enable continuity of harvest.
10. The existence of relevant community infrastructure.
11. Australia's maintenance of its export woodchip market share.
12. Farming community acceptance of an increased plantation estate. (Value and use of land after timber harvest are significant considerations).

Source:Meagher (1993)

Apart from the social and economic factors, policy initiatives by governments also provide an important impetus to plantation promotion and establishment, and these need to be considered along with the other factors in plantation potential. Government forest policies such as Plantations for Australia: 2020 Vision, the Wood and Paper Industry Strategy, the National Farm Forestry Program, CALM's plantation initiatives, Agriculture Western Australia's extension programs, Landcare, Integrated Catchment Management, Western Australia's Salinity Action Plan and other programs and policies are encouraging more plantations on cleared, privately-owned land in Western Australia. The benefits of plantations to the rural landscape are not just to provide wood. There are benefits in the lowering of watertables and implications for the amelioration of dryland salinity processes. Farm forestry can also provide shelter to crops and livestock and increase the aesthetic and wildlife values of farmland (Shea and Hewett 1997).

CALM's maritime pine project in the 400m to 600mm rainfall zone (and on the coastal plain sands), is a key initiative under the State's Salinity Action Plan. The 150 000 hectares of *P. pinaster* CALM aims to establish with private landowners, will help combat salinity problems.