5

Plantations

5.1 As discussed in Chapter 2, the National Forest Policy Statement of 1992 included the objective of expanding Australia's plantation estate, an objective this Committee supports. The principle mechanism created to encourage the establishment of more plantations was the *Vision 2020* initiative.

5.2 As also discussed in Chapter 2, the land area of plantations in Australia has roughly doubled since 1997, when *Vision 2020* was launched. Most of this plantation expansion has been in hardwood plantings. For a graphic representation of the expansion of the plantation estate – from 1950 to 2010 – see Figure 5.1, below.

5.3 The term 'plantation' is generally understood – in the community – to refer to large plantings of a particular kind of tree (often exotic). In the 1992 Statement, plantations were defined as 'intensively managed stands of trees of either native of exotic species, created by the regular placement of seedlings or seed.'[1] However, this definition is misleading, because it suggests that plantations are composed of a single species.

5.4 In fact, plantations can be planted with a mix of different species, in a variety of planting arrangements and patterns. Whilst many concerns about plantations relate to monocultural plantations – those planted with one species only – considerable research and investment has gone into developing mixed plantations, and the Committee is keen to see these kinds of plantations expand in the future.

5.5 This Chapter will consider a number of issues relating to plantations, including:

- land and water competition;

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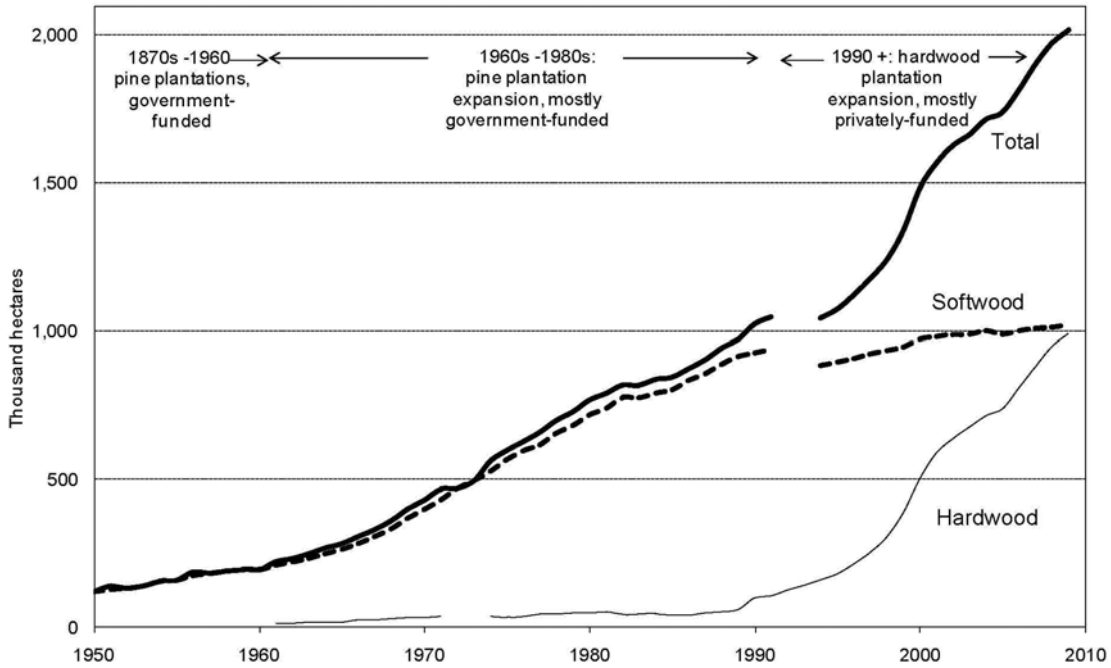
1 *National Forest Policy Statement* (1992), glossary, iii.

- planting, including rotation length and sustainability, and finance and investment;
- management, including the use of thinning, impacts on the local environment and impacts on the local community; and
- products and innovation.

Figure 5.1 Phases of plantation development in Australia since 1950



Source *Submission 59, Department of Agriculture, Fisheries and Forestry, p.12.*

Land and water competition

5.6 The terms of reference for the inquiry include the 'impacts of plantations upon land and water availability for agriculture'. The Committee received considerable evidence about the impact that plantations can have on their local area and region, and the Committee is keen to share its findings.

Land competition

5.7 The plantation estate has expanded considerably in the past two decades, and this has seen the transformation of land area from agricultural to forestry uses. As noted by Dr Jackie Schirmer, this has fuelled two major concerns in the agricultural sector: first, that it reduces the amount of land

available for agricultural use; and second, that it drives up the price of agricultural land.[2]

5.8 The Department of Agriculture, Fisheries and Forestry cites research by Jacki Schirmer that showed

> rapid plantation expansion in some regions and over some periods has contributed to land price increases. Land prices have also increased rapidly in other areas. [In addition] National Plantation Inventory data show that the rate of plantation expansion in the late 1990s and early 2000s was exceptionally high.[3]

5.9 Timber Queensland states that

> Recent expansion of the plantation estate in some regions has caused friction with other traditional industries and resulted in generally poor community acceptance of plantations. These conflicts have been particularly prevalent in north Queensland, where plantations have been established on former cane land.[4]

5.10 Councillor Ian Howard, from the Meander Valley Council (Tasmania) submitted that plantations must be considered on a regional basis, to ensure that other land uses in the region are still viable:

> Timber plantations should not be defined as agriculture and should not be competing with food crops for access to agricultural land of any class without some mechanism to control plantation densities within a region. Too many plantations in a region can make traditional and essential agriculture unviable within that region.[5]

Plantations can be integrated into farm operations, and can be a form of farm forestry. Plantations can be integrated into a range of different land uses, and trees can play an important role in many different ways in land management. The role of trees in land management is discussed further in the next chapter, on farm forestry.

5.11 As noted by many submissions, the impact of plantations on land competition – both the availability and price of land – is mixed, and not as great as some in the community have claimed. For example, A3P suggests that the impact of plantation expansion is only one of many factors increasing the cost of land. Other factors include:

2 Submission 11, Dr Jackie Schirmer, p.8.
3 Submission 59, DAFF, p.19.
4 Submission 65, Timber Queensland, p.5.
5 Submission 102, Councillor Ian Howard, p.2.

> low interest rates, high commodity prices, strong international demand for Australian farm products, rationalisation in the rural sector with farm amalgamations, competition for farms from overseas buyers, and multiple changes in land use.

The changes in land use include plantations, as well as:

> broadacre cropping (a major land-use change); dairying and beef cattle expansion; intensive agriculture; farm consolidation; rural subdivision and lifestyle farms (especially in popular 'sea-change' and 'tree change' regions); and urban encroachment.[6]

5.12 The Forest Industries Association of Tasmania submitted that 'plantations do not compete significantly for prime agricultural land with other agricultural users in Tasmania. The free market effectively determines the allocation of land between agriculture and plantations.'[7] As FIAT continued, the per-hectare price of prime agricultural land in Tasmania precluded plantation expansion on such land.

5.13 Professor Jerry Vanclay suggested that the expansion of cities represents greater land competition:

> There is greater land use competition (and longer-term implications) between urban development and agriculture than there is between forestry and agriculture, so the forestry-agriculture competition should be kept in perspective.[8]

5.14 Australian Forest Growers note that the total area of plantations is very small – less than one percent of total land area. By contrast, AFG quotes figures showing that '61% of Australia's total land area...is occupied by grazing and cropping.'[9]

5.15 Numerous submissions to the inquiry have suggested that the market be left to allocate land to the highest-value use. The Institute of Foresters of Australia advocates 'a free market as the best mechanism for determining land use. Landowners should be free to use and trade their land as they judge best unless there are compelling reasons for community intervention'.[10] Professor Jerry Vanclay suggests that 'Ideally, if market distortions can be avoided, agriculture-forestry issues should be resolved by the marketplace by economics of crop yields, rather than by

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6 Submission 99, A3P, p.15.

7 Submission 72, FIAT, p.19.

8 Submission 18, Professor Jerry Vanclay, p.2.

9 Submission 81, Australian Forest Growers, p.12.

10 Submission 84, Institute of Foresters of Australia, p.22.

legislation.'[11] According to the Forest Industries Association of Tasmania, the market already performs its role efficiently in Tasmania.[12]

5.16 The Committee has found that plantations can make a local impact on land competition, but at a regional or national level, their impact has been overestimated. It supports the principle that the market be used to allocate land to the highest-value use.

Water competition

5.17 Whilst the expansion of plantations has, in some places, increased competition for land, plantations can also compete for water. As noted by the CSIRO, 'water availability is the most important limiting factor to plantation productivity across most of the plantation estate.'[13] According to Australian Forest Growers, plantations in Australia are 'generally a non-irrigated crop.'[14]

5.18 Some evidence to the Committee told of community disquiet about the extent to which plantations remove water from the local environment. As noted by Professor Peter Kanowski and colleagues, both competition for water and social conflict over 'plantation expansion militate against [international] investment' in plantations.[15]

5.19 As for the actual impact of plantations on the local water resource, the submission from the CSIRO describes a complex situation. Whilst plantations use more water than crops or grassland, 'the impacts of plantations on water security and availability had been overstated and the importance of the much larger area of natural forests on water availability for urban catchments needs to be emphasised.'[16] Further, the water impact is likely to be local rather than regional. The submission also notes that:

> plantations accessing groundwater may use water more efficiently...that is they produce more timber per unit of water than plantations without access to groundwater. This suggests that careful siting of plantations in the landscape can maximise timber production while minimising impacts on catchment water yield.[17]

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11 Submission 18, Professor Jerry Vanclay, p.2.
12 Submission 72, Forest Industries Association of Tasmania, p.30.
13 Submission 39, CSIRO, p.2.
14 Submission 81, AFG, p.4.
15 Submission 75, Professor Peter Kanowski et al, p.2.
16 Submission 39, CSIRO, p.3.
17 Submission 39, CSIRO, p.10.

5.20 As noted by Private Forests Tasmania, the concern about the water use of plantations is 'made worse by considerable periods of drought'.'[18] Timber Communities Australia considers that 'the potential competition between the forestry and agriculture sectors, particularly for water, has been exaggerated by some commentators and that both sectors complement rather than compete with each other.'[19]

5.21 The evidence presented to the Committee suggests that the water impact of plantations is primarily at the local level. In addition, it is clear that good planning, planting and management can ensure that plantations can be sensitively integrated into the local water management regime. One submission to the inquiry suggested that 'it should be a mandatory requirement that all future plantation developments be accompanied by a water management plan and a water audit of the area.'[20]

5.22 Professor Peter Kanowski and colleagues have noted that there is a need for better understanding of 'the complex relations between forests and water yield, and associated risk factors such as fire.'[21] Further discussion of plantations and water is under the heading 'environmental impact of plantations', below.

Committee Comment

5.23 The Committee is well aware that there is concern in some rural and regional parts of Australia – particularly in regional and rural areas – about the impact of plantation expansion on land and water competition. As noted above, both the actual competition and the associated community disquiet have the potential to constrain the further expansion of plantation forestry in Australia.

5.24 As for land competition, the Committee considers that the expansion of plantations has certainly increased land competition in some local areas of Australia. However, at a regional and national level, the impact is negligible. As noted above, the amount of land currently under tree plantation is miniscule compared to that in native forest or agriculture. The Committee is aware that there are many other pressures on agricultural land, and blaming plantations alone for the entirety of land competition is unreasonable.

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18 Submission 92, Private Forests Tasmania, p.8.

19 Submission 35, TCA, p.8.

20 Submission 100, Western Rivers Preservation Trust, p.4.

21 Submission 75, Professor Peter Kanowski et al, p.4.

5.25 In regard to water competition, the Committee has found that plantations might have a local impact, but regionally and nationally their impact is very low. In addition, plantations have a complex and dynamic impact on water resources, and can actually play a significant role in improving the quality and management of water resources if planned well.

5.26 Land planning and water allocation are primarily dealt with by state and local governments. The role of the Australian Government is limited, and the Committee believes that land and water competition can and should be resolved at a local and regional level.

5.27 As put by Professor Gordon Duff:

> [We] have a natural advantage in Australia for growing trees; we do. It is something we are good at, we have expertise and we have the infrastructure. We have the land [based] issues to do with competition for water and space aside. We have got the know-how to resolve those issues. It gives us the security going forward. It is [playing] to a natural advantage. There are those multiple benefits from managing and growing forests beyond just wood production, which include carbon sequestration, energy resources and dealing with other land management issues like salinity.[22]

5.28 The Committee believes that the further expansion of the plantation estate can be achieved with the agreement and support of local communities. Plantations make a contribution to local economies, and can assist the treatment of local environmental problems. The industry should ensure that it engages flexibly and constructively with local communities to ensure that it adequately addresses community concerns and builds local support. The 'good neighbour charter' in Tasmania is a good example of finding agreement between agriculture and forestry,[23] and a similar approach could be used elsewhere to deal with issues like water and land competition. It is an example of the forestry industry ensuring its own future, by building its social licence at a local level. (Social licence is further discussed in Chapter 8).

Planting

5.29 As discussed in Chapter 2, there was a massive expansion in Australian plantations during the 1960s, and a second big expansion in the past two

22 Professor Gordon Duff, *Committee Hansard*, 24 June 2011, p.26.

23 Submission 72, FIAT, p.30.

decades. More plantations should be established over the coming years, as this will support economic growth and ensure the long-term viability of the forestry industry. However, there are certainly some challenges to overcome in order to achieve this. These challenges – and possible solutions – will be discussed as follows:

- rotation length;
- finance and investment; and
- Managed Investment Schemes.

As discussed in Chapter 3, there is also a potential role for the Carbon Farming Initiative to support plantation expansion in the future.

Rotation length and sustainability

5.30 The period for which a tree is grown before harvesting is commonly referred to as the 'rotation length'. A plantation goes through a cycle of planting, growing, harvesting, and then replanting. The length of time between planting and replanting may be from ten years up to seventy or eighty years[24]: this is the rotation length.

5.31 Both softwoods and hardwoods can be grown for short- and long-rotation: in general, short-rotation (perhaps 10 to 15 years) suits trees that are to be chipped or pulped, and long-rotation (more than 20 years) suits trees that are to be grown for sawlogs. As noted in the *State of the Forests Report 2008*, the expansion of plantations since 1998 has been particularly focussed on short-rotation hardwoods.[25] A graphic representation of new plantation establishment is in Figure 5.2, below: it is mostly hardwood. However, Australia's timber and wood-product needs can only be met by plantations of both short- and long-term rotation softwood and hardwoods.

5.32 Many submissions to the inquiry called attention to the fact that much of the recent expansion in plantations has been in short-rotation regimes, and called for future expansion to focus on long-rotation regimes.[26] The greatest impediment to further expanding the long-rotation plantation

24 Submission 69, Mr David Cameron, p.2.

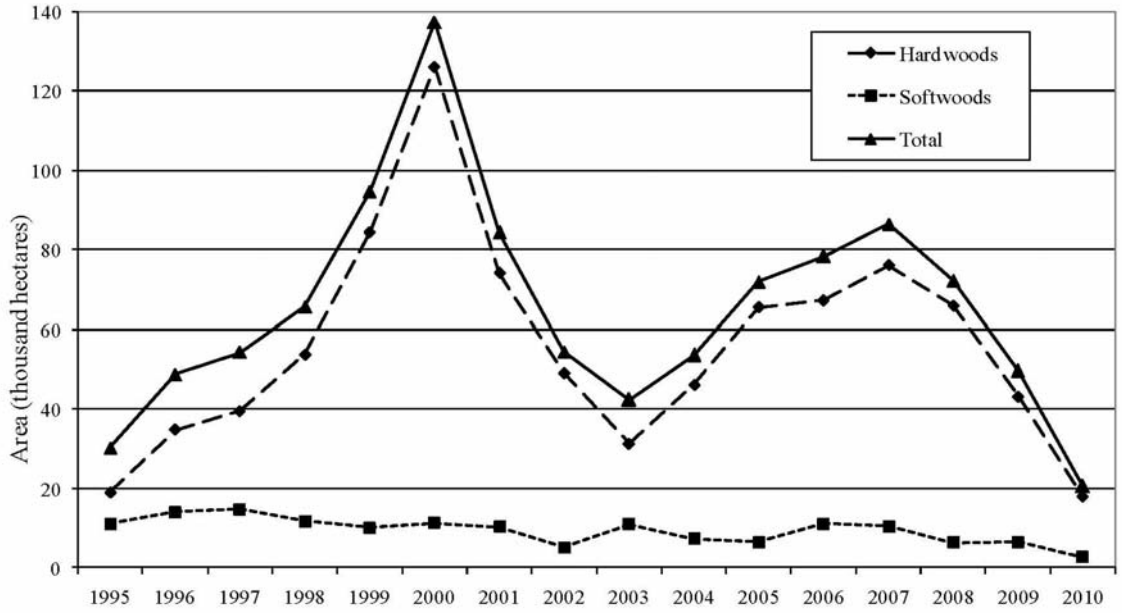
25 *State of the Forests Report 2008,* p.194.

26 Submission 58, Forest Growers' CEO Forum of Australia, p.4; Submission 65, Timber Queensland, p.3; Submission 81, Australian Forest Growers, p.2; Submission 84, The Institute of Foresters of Australia, p.11-14.

estate is the considerable investment period (with increased risks) and the decades-long wait for a return on that investment.[27]

5.33 The establishment of new long-rotation plantations is clearly a priority for Australia to ensure a more balanced industry and stronger domestic supply chain. The following section will discuss the finance and investment challenge for such plantations.

Figure 5.2 New plantation area reported, 1995-2010, Australia (National Plantation Inventory)



Source *Submission 59, Department of Agriculture, Fisheries and Forestry, p.20.*

Finance and investment

5.34 Historically, as noted above, investment in plantations came largely from governments and state-owned agencies and corporations. However, governments have generally not made direct investments in plantations for some decades:

> State Governments appear to have ceased or greatly reduced their investment in establishing new plantations. It is difficult to see, if an increase in plantation production is desired, where new investment will come from.[28]

27 Submission 65, Timber Queensland, p.3; Submission 81, Australian Forest Growers, p.13; Submission 70, NSW Forest Products Association, p.12.

28 Submission 68, Future Farm Industries Cooperative Research Centre, p.7.

5.35 As discussed in Chapter 2, policy in the past two decades has emphasised private establishment and ownership of plantations. Encouraging private investment in long-rotation plantations is one of the biggest challenges for the future of the Australian forestry industry.

5.36 Evidence from the Department of Agriculture, Fisheries and Forestry underlined the need for the market to fund plantation expansion:

> Australia's forest industry should be competitive, sustainable, self-reliant and responsive to market signals. A stable operating environment that provides certainty but allows free market mechanisms to have influence will help to achieve this.[29]

5.37 As noted by many submissions to the inquiry, there are three main disincentives to investment in long-rotation plantations. First, they involve a much longer investment period than many other investments. Second, there is a greater risk attached to the investment than for other investments. Third, there is a lower rate of return than investors might receive for other investments. As described by the NSW Forest Products Association:

> The long time frames expose investors to greater liabilities of resource failures, such as bushfires and political interference...Poor profitability is attributed to the high initial costs of acquiring land, establishing the plantation and the need for early silvicultural treatment. That creates a huge opportunity cost of capital for a period of time until the investment hopefully matures after several decades.[30]

Managed Investment Schemes

5.38 As noted by the submission from the Department of Agriculture, Fisheries and Forestry, the expansion of the plantation estate was partly attributable to changes in taxation law, made by the Australian Government.[31] These changes led to the creation of managed investment schemes (MIS) in forest plantations. Whilst this increased the short-rotation plantation estate, the Committee found general agreement that MIS arrangements have so far done little to encourage long-rotation plantations. The discussion of MIS and plantations will address two of the major areas of concern – viability and usefulness.

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29 Mr Ian Ruscoe, *Committee Hansard*, 15 June 2011, p.1.

30 Submisison 70, NSW Forest Products Association, p.12.

31 Submission 59, DAFF, p.24.

5.39 MIS arrangements were developed to encourage new investment in the rural sector. They helped to focus on the value of rural and regional industries. However, as will be seen below, in some cases they were badly targeted and poorly managed. Future investment strategies to encourage investment in the rural sector will need to be carefully researched and redesigned with the specific goals of the strategies in mind. Farmers and investors must work together to ensure that such investments are broadly supported as part of normal agricultural practice. Such goals could include, for example, the encouragement of long rotation plantations. Whilst this is a general task across rural economies, the Committee has made specific recommendations about MIS and plantations.

Viability

5.40 For additional background information, the report of the Parliamentary Joint Committee on Corporations and Financial Services' *Inquiry into aspects of agribusiness managed investment schemes*[32] contains useful discussions of how MIS operates. That inquiry's terms of reference referred to two major MIS companies that went into administration in the first half of 2009. As noted by that Committee's report, both outside events and structural deficiencies within the MIS model have been blamed for their collapses.[33]

5.41 Criticism of MIS schemes in submissions to this inquiry have been broad ranging, raising questions about both outside events and structural deficiencies.

5.42 In respect of outside events, many submissions blamed the global financial crisis. The NSW Forest Products Association noted that 'highly leveraged capital requirements brought about the collapse of [one] enterprise in the Global Financial Crisis.'[34]

5.43 In respect of structural deficiencies, many blamed the poor conduct of individual MIS scheme operators, and the failure of the MIS model to prevent this occurring. New Forests Pty Ltd pointed out that 'MIS companies were often driven by financial product sales and occasionally became undisciplined in the acquisition of land for forestry.'[35] Agriwealth Capital claimed that 'collapses arose because of the mismanagement by

32 Available at: http://www.aph.gov.au/senate/committee/corporations_ctte/MIS/report/report.pdf.

33 Parliamentary Joint Committee on Corporations and Financial Services, *Inquiry into Aspects of Agribusiness Managed Investment Schemes,* p.32.

34 Submission 70, NSW Forest Products Association, p.29.

35 Submission 2, New Forests, p.2.

those entrusted with the responsibility to properly manage the respective plantations.'[36]

5.44 Queensland Timber noted that the global financial crisis exposed 'some serious flaws in the operation of the MIS model, where future management liabilities were not adequately accounted for.'[37] The submission goes on to say that, with improvement to the model, MIS 'remains an important vehicle for investment in timber plantations into the future.'[38]

5.45 Proposed MIS plantations should develop a prospectus for the market that reflects the fact that plantation products are commodities. Prospectuses must be based on sound market principles, and properly researched. Getting funding for plantations is a question of market investment, and proposals must be prepared by investment market and financial experts, to get an effective prospectus that reflects the needs in the marketplace.

Usefulness

5.46 There has been considerable debate about the kinds of plantations delivered under MIS arrangements. As described by Mr Ian Ruscoe, of the Department of Agriculture, Fisheries and Forestry, 'there seems to have been some disjoint between what has been planted in the plantation estate versus market demand.'[39]

5.47 As noted above, there is considerable agreement that MIS did little to encourage hardwood sawlog plantation expansion. However, evidence to the Committee suggests that some of the MIS plantation estate was poorly planned – planting the wrong trees in the wrong places. According to Mr Nick Roberts, of the Australian Forest Products Association,

> We know that the MIS regime has worked to put trees in the ground but has not worked to put the right trees in the right ground to meet our actual needs. It is in the wrong locations; it is not located where the processing plants are to allow leverage on existing infrastructure.

5.48 Miss Linda Sewell, of the Australian Forest Products Association, suggested that MIS managers did not necessarily consider the best place to locate plantations:

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36 Submission 44, AgriWealth Capital Limited, p.2.

37 Submission 65, Timber Queensland, p.3.

38 Submission 65, Timber Queensland, p.3.

39 Mr Ian Ruscoe, *Committee Hansard*, 15 June 2011, p.2.

> As an industry we probably would consider there are probably enough trees in the ground but they are just in the wrong place...From a private forestry perspective, that is typically what you would want to do; you would want to put the trees in the ground where there is a reasonable infrastructure anyway. But when you are looking at tools around things such as MIS investment you have got a very different group of investors, who are really just looking at the financial return. They do not care where the tree is.[40]

5.49 Regarding the kinds of species planted in MIS plantations, witnesses had general comments to make about the suitability of these decisions:

> The MIS tax incentives drove a lot of money into plantations and it was like a gold rush. To get those trees in the ground by the end of June meant that the wrong species were planted in the wrong place at the wrong time. There was no prudent linkage to a productive outcome.[41]

5.50 In Victoria, witnesses gave evidence about the inability of MIS to put the right species of trees in plantations: 'We ended up with an MIS and blue gums. It has failed us and we need to revisit [this] and look at why it failed and start to rebuild.'[42]

5.51 The issue of species is also linked to that of location: the right kind of tree must be grown near the right kind of infrastructure and processing facilities:

> We are in a situation here where I think about 60 per cent of our plantation asset in this area from here [Grafton] to the Queensland border is dunnii or white gum. It is ideal for pulping. We have no pulping facility. We have no port access to export that product.[43]

5.52 However, as noted by Mr David Shelton, of New Forests Pty Ltd, the original MIS structure was not tasked with ensuring that the best species of tree was planted in the best location:

> When the original MIS legislation was drafted it had the mandate of encouraging plantation establishment. It did not say anything about species, location et cetera. On those grounds, it was a tremendously effective instrument—using the tax tool to do

40 Miss Linda Sewell, *Committee Hansard*, 10 August 2011, p.44.

41 Councillor Lindsay Passfield, *Committee Hansard*, 1 September 2011, p.18.

42 Mr James Williams, *Committee Hansard*, 10 August 2011, p.31.

43 Councillor Lindsay Passfield, *Committee Hansard*, 1 September 2011, p.18.

> exactly that...The mandate then is for the people charged with the policy design, the mechanism design, itself to deliver not only an incentive for plantation establishments, but an incentive for plantation establishment of softwoods in these sorts of locations... So there are ways of doing it, it just comes back to your objective in the mechanism design. Is it softwood and hardwood or is it just plantations?[44]

Changes to MIS

5.53 Whilst, as noted above, there is considerable agreement that MIS did little to support new long-rotation (sawlog) plantations, evidence suggests that the mechanism might be able to do so in future. As noted by Mr Ian Ruscoe of the Department of Agriculture, Fisheries and Forestry, legislative change in 2007 was aimed at ensuring that long-rotation plantations could be supported by MIS. In his words:

> I think the government has made some conscious decisions to try to increase the amount of longer rotation plantations. Specifically there were additional changes to the tax law I think in 2007 that allowed secondary trading of your investment. That was put in place to try to encourage people to come in and invest for a period and then, when they thought the time was right, they could sell up and someone else could buy that investment and grow it through for 10 to 15 years to give us a longer rotation.[45]

5.54 Other evidence supported this view. As described by Mr Richard Stanton, of the Australian Plantation Products and Paper Industry Council (A3P):

> A provision was inserted into the amended legislation that allowed an investor to sell a plantation part way through its life and get the return on their investment that way, rather than waiting until the final harvest, and not lose their tax deduction. We thought that was a good mechanism to help encourage secondary markets in immature plantations under the MIS system, but it did not have a chance to run its course before we saw the other problems with MIS investment and corporate failure.[46]

5.55 Ms Lisa Marty, of the Victorian Association of Forest Industries, supported the ability to trade MIS investments during the lifecycle of

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44 Mr David Shelton, *Committee Hansard*, 24 August 2011, p.5.

45 Mr Ian Ruscoe, *Committee Hansard*, 15 June 2011, p.6.

46 Mr Richard Stanton, *Committee Hansard*, 25 May 2011, p.5.

long-rotation plantations,[47] and Dr Peter Volker, of the Institute of Foresters of Australia said that this kind of flexibility would be necessary to encourage long-rotation plantations through MIS.[48]

5.56 As discussed above, the events of the global financial crisis have largely precluded a consideration of whether the secondary-trading amendments have encouraged long-rotation plantations. However, in time this will be possible.

Committee Comment

5.57 The Committee is aware of the broad range of views regarding the role of MIS in plantation expansion. Some see MIS as an unfair tax break; others see MIS as a way for plantations to compete on an equal footing with other investments. In either case, the Committee believes that MIS amounts to intervention by the Australian Government in the market, by changing the incentives and costs of investment in plantations. This does not mean that MIS is necessarily a good or a bad thing, but it must be assessed according to the objective it is intended to achieve. For this, there must be clarity about why such an intervention has been made.

5.58 For example, the Committee has heard considerable evidence alleging MIS failed to ensure that plantations were established in appropriate locations and with appropriate species. Many witnesses have, however, pointed out that the MIS mechanism was not originally designed to ensure that these decisions would be made appropriately.

5.59 The Committee believes that there are four steps for the Australian Government to determine whether MIS remains a viable way to encourage investment in plantations. These steps are, however, constructed around plantations rather than around MIS itself.

5.60 First, the objective must be identified: in this case, the encouragement of long-rotation plantations. Second, the best way to meet the objective must be determined: is it necessary and appropriate for government to provide an incentive to meet that objective? Third, the mechanism must be assessed: is MIS the best mechanism to meet that objective? Four, if MIS is the best mechanism to meet that objective, does it need to be altered to make it more effective? Each step self-evidently follows from the previous one: if a negative answer is found, then MIS is clearly not a viable way to encourage investment in plantations.

47 Ms Lisa Marty, Victorian Association of Forest Industries, *Committee Hansard*, 10 August 2011, p.8.

48 Mr Peter Volker, *Committee Hansard*, 24 June 2011, p.30.

Recommendation 10

5.61 **The Committee recommends the Australian Government lead a process through COAG to create a national plan for plantations, to ensure that:**

- **plantations of appropriate species are planted in appropriate locations; and**
- **appropriate regional infrastructure exists or is planned and funded.**

Recommendation 11

5.62 **The Committee recommends the Australian Government:**

- **decide whether the encouragement of long-rotation plantations is an appropriate objective of policy;**
- **establish whether it is necessary and appropriate for government to provide an incentive to meet that objective;**
- **if it is, set out a clear plan to meet that objective, according to the national plan for plantations;**
- **assess whether MIS as a mechanism can meet that objective;**
- **if MIS can meet that objective, determine whether it needs to be altered to make it more effective; and**
- **if MIS cannot meet that objective, determine whether other mechanisms could do so.**

5.63 Long-rotation plantations can be viable through the resources of various markets. A new market opportunity is available by generating credits for carbon sequestration, through the Carbon Farming Initiative, as discussed in Chapter 3.

Management

5.64 As frequently discussed during the inquiry, plantations must be carefully and actively managed over their life-cycle to produce particular timber and wood-products: this management is commonly referred to as 'silviculture'. As noted in the next chapter, farm forestry can be a tool of land management, ensuring that agricultural land is both productive and kept in good condition. Plantations can be used in the same way, assisting with the management of salinity for example.

5.65 Management must be specific to the product being produced. Submissions to the inquiry noted that many plantations have not been managed for sawlog production.[49] The Department of Agriculture, Fisheries and Forestry submitted that 'Less than 10% of hardwood plantations, perhaps no more than 5%, are managed for sawlog production.'[50] The remaining 90% or 95% of hardwood plantations are managed for lower-value products, such as woodchips.

5.66 There is considerable silvicultural expertise in Australia, but, as discussed in Chapter 8, Australia is continuing to rely on foreign-trained forestry professionals. Improving the domestic interest in forestry careers will help to ensure that Australia maintains the necessary skills to manage plantations for all kinds of products. This section of the chapter will discuss the role of thinning, the impacts of plantations on the local environment, and the impacts of plantations on the local community.

Thinning

5.67 Plantations that are managed for sawlogs are typically thinned at least once. Thinning involves the selective removal of some trees in a plantation in order to manage the growth of the remaining trees. According to the Institute of Foresters of Australia, 'softwood plantations need to be thinned at least once during the rotation to produce quality sawlogs of reasonable sizes, and the best sawlogs are produced from plantations that are thinned two or three times.'[51] Many submissions discussed thinning trials and experimentation with different thinning regimes.[52] Certain

49 Submission 23, Dr Glen Kile et al, p.3; Submission 70, NSW Forest Products Association, p.14.

50 Submission 59, DAFF, p.15.

51 Submission 84, Institute of Foresters of Australia, p.11.

52 Submission 36, Mr John Lord, p.5 & 13; Supplementary Submission 59.1, Department of Agriculture, Fisheries and Forestry, pp.1-6; Submission 39, CSIRO, p.9.

species being grown for 'appearance-grade' timber must also be pruned during the rotation.[53]

5.68 The CSIRO submitted that, whilst there is considerable knowledge about suitable thinning and pruning regimes, the application of this knowledge to plantation management has been limited.[54]

5.69 This is an important part of the plantation management, but it also means that plantation owners must find a use for 'thinnings'. Associate Professor J. Doland Nichols noted that:

> A major challenge for us is to convince forest owners to thin - currently there is no market for wood chips within close proximity to most of these plantations. We also have no know uses for small logs. Thus the plantations stay unthinned, meaning that they are unlikely ever to produce good sawlogs.[55]

5.70 At the moment, thinnings are often exported as woodchips, without any further processing in Australia.[56] New technology allows logs to be 'peeled' much earlier, providing a new market for thinning. New technologies will enable plantations to be more profitable and encourage improving management. This issue will be discussed further below, in the final section of the chapter.

Environmental impact of plantations

5.71 As noted in the first section of this chapter, there is some community concern about the impact of plantations on competition for water. Additional concerns have been raised about the impact of plantations on the local environment, including specific concern about single-species plantations (monocultures). However, plantations can also play a positive role in improving the local environment.

5.72 One submission alleged chemical contamination of water catchments as a result of aerial spraying of plantations.[57] Another submission stated that:

> the impact of the toxic products released by large acreages of monoculture exotic eucalypt plantations on ecosystem health and

53 Dr Christopher Harwood, *Committee Hansard*, 22 June 2011, p.3.

54 Submission 39, CSIRO, p.9.

55 Submission 32, Associate Professor J. Doland Nichols, p.4.

56 Submission 70, NSW Forest Products Association, p.17.

57 Submission 100, Western Rivers Preservation Trust, p.5.

> water quality has not been addressed with full and contemporary risk assessments.[58]

5.73 However, there is no simple rule for or against monocultures as opposed to mixed plantings. The appropriateness of a particular kind of plantation will depend on its location and context. As noted during a public hearing:

> We tend to the view that diverse systems are always more robust and better to have than single monocultures, but that does not mean to say that there are not places where single species plantations can play an important role in a range of areas. The important issue with that is around making good, wise, sensible location decisions, and those decisions need to take consideration of the other impacts...and things like other pollutants—like the management of nutrients, pesticides and the like into adjoining waterways.[59]

5.74 Some submissions discussed the possibility for plantations to have a positive effect on biodiversity:

> plantations of all sorts can provide habitat for native birds and mammal species associated with forests, woodlands and open country. Plantations can make a positive contribution to biodiversity conservation and hence sustainable landscapes. These contributions can be enhanced through measures such as planting blocks, planting close to remnants, retaining remnants within the plantation, harvesting in patches to retain connectivity and including some rough barked species and understorey.[60]

5.75 The Department of Sustainability, Environment, Water, Populations and Communities agreed with this notion, but emphasised that the opposite could also occur if plantations are not properly managed:

> Well managed plantations can contribute to maintaining biodiversity and providing ecosystem services...there is potential for the Australian forestry industry to extend environmental benefits through plantation configuration (for example, expanding biodiverse native tree plantings where appropriate), the location of plantations in the landscape (for example, to provide additional ecological connectivity) and their on-going management. Conversely, poorly implemented plantations may have negative

58 Submission 97, Tasmanian Public & Environmental Health Network, p.2.

59 Mr Mark Flanigan, *Committee Hansard*, 6 July 2011, p.6.

60 Submission 15, North East Firewood Strategy Implementation Committee, p.5. See also Submission 50, Farmed Forests of the North East, p.7;

> impacts on biodiversity, such as native vegetation clearing and ecosystem fragmentation.[61]

5.76 The CSIRO also pointed out the potential for plantations – planted in the right area – to increase available freshwater by reducing salinity:

> Plantations can also impact on salinity and have been suggested as an attractive tool to help manage salinity in land and rivers. Plantations established in salt source catchments such as those in the headwaters of major river systems, may have a net positive impact on freshwater supplies.[62]

5.77 Australian Forest Growers note that plantations can play other positive roles, including reducing runoff during storms, which can 'lessen flood damage, landscape erosion and river siltation.'[63]

5.78 Above all, it is clear that there is no simple, straightforward way to characterise the impact of plantations on the local environment. There are obviously some places where plantations are not suitable land-uses. In places where plantations are suitable, each plantation must be carefully planned, and sensitively integrated into its local environment. Dr Charles Zammit, of the Department of Sustainability, Environment, Water, Populations and Communities, summed up some major considerations:

> The first part is the mix of plantings—the biodiversity versus the monoculture. Encouraging the industry to, where it can, mix the plantation species has an environment benefit. It can also allow you to get a diversity of product. If you structure it carefully there is room for diversity of product mix from a more diverse pool and different species of trees. [The second part is]...around planning in the region and the careful location of plantations in the context of regional land use planning for a range of benefits, including things like corridors, adaptation to climate change and so on. The third [part] is the ongoing efforts around stable forest management—thinking about the systems for managing fire, weeds, water run-off and all of those sorts of questions.[64]

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61 Submission 71, Department of Sustainability, Environment, Water, Populations and Communities, p.3.

62 Submission 39, CSIRO, p.10.

63 Submission 81, AFG, p.12.

64 Dr Charles Zammit, *Committee Hansard*, 6 July 2011, p.9.

Community impact of plantations

5.79 Two major community impacts from plantations will be discussed in this section – the impact on economic growth, and the impact on social dislocation. As noted in other sections of this report, it is essential for the forestry industry to maintain and improve its social licence. In order to ensure a viable future, the industry must have the support of the Australian community.

Economic growth

5.80 A case study from the *State of the Forests Report 2008*, based on the 'great southern region' of Western Australia, suggested that plantations had both a direct and indirect regional economic impact:

> ...it is estimated that 17 jobs are created for every $1 million spent in the forest industry. In addition, each direct job produces 0.7 indirect jobs in the region, as well as employment outside the region when goods and services are imported from elsewhere. The region generally experienced either rural population growth or reduced rates of rural population decline between 1991 and 2004 due to the expansion of the plantation estate...The supply of local independent employment in the forest sector and the integration of plantations with multiple forms of land use have contributed to a diverse economic base that has helped stabilise the population and improved prospects for long-term economic growth in the region.[65]

5.81 Australian Forest Growers submitted that 'plantation establishment can contribute significantly to stable economic growth while at the same time conferring added environmental protection in regional areas.'[66] However, Farmed Forests of the North East suggest that 'this growth tends to mainly accrue in regional centres and where plantation expansion is rapid, may be perceived negatively by the community and give rise to social conflict.'[67]

5.82 Dr Jacki Schirmer cautioned against viewing economic benefits in simplistic ways:

> The eucalypt and softwood plantations making up the majority of Australia's current plantation estate generate more jobs in total

65 *State of the Forests Report 2008*, p.170.

66 Submission 81, Australian Forest Growers, p.19.

67 Submission 50, Farmed Forests of the North East, p.5.

> than broadacre sheep and beef grazing and cropping. However, they only generate more jobs once plantations are mature and enter a cycle of harvesting and replanting, and when the downstream processing generated after harvest is included in the analysis. Jobs in the plantation industry are typically located in regional towns and cities, whereas agricultural jobs are typically located in smaller towns and on rural land, indicating that a shift to plantations is accompanied by a change in the location of employment. This means that there is no simple 'positive' or 'negative' impact of plantation expansion on jobs: some regions will benefit from job growth, and others will experience net loss of jobs, as a result of the establishment of plantations on land previously used for agriculture.[68]

Social dislocation

5.83 Some submissions have spoken of the social dislocation that can follow plantation expansion. Examples include Private Forests Tasmania:

> Plantation developments have often caused localised levels of concerns in rural communities due to concerns about the loss of agricultural land and social dislocation as farming families move from the area impacting on the viability of local community services.[69]

Australian Forest Growers:

> a key area of identified concern is the social dislocation of communities purportedly as a result of the establishment of broad scale plantations. While AFG continues to hold the view that these concerns are at least overstated it remains the case that substantial variation to traditional land use 'offends' many rural communities.[70]

And Timber Queensland:

> Recent expansion of the plantation estate in some regions has caused friction with other traditional industries and resulted in generally poor community acceptance of plantations. These

68 Submission 118, Dr Jacki Schirmer, p.2-3.

69 Submission 92, Private Forests Tasmania, p.7.

70 Submission 81, Australian Forest Growers, p.20.

> conflicts have been particularly prevalent in north Queensland, where plantations have been established on former cane land.[71]

5.84 Timber Communities Australia has cited research undertaken by Dr Jacki Schirmer, finding that:

> plantation establishment on a large scale does have some social impacts in the short term but this has to be weighed against the fact that rural populations are declining in many areas, regardless of the establishment of plantations...Where plantation establishment is accompanied by wood processing industries, the socio-economic benefits to the region can be significant. Schirmer has identified the timber industry as a significant factor in population increases in Tumut and Adelong, at a time when many other towns in the region are suffering declines.[72]

5.85 The impact of plantations on local communities is varied, and as noted at the start of the chapter, the forestry industry must actively work to ensure that the negative impact is minimised, and the positive impact amplified. If the community sees financial benefits for the region as a whole, it will be more prepared to accept well thought-out plantation enterprises.

Committee Comment

5.86 This report has highlighted a number of important issues for the future of plantation management. Each of these areas is fundamental to both the viability of plantations – including long-rotation plantations – and the necessary improvement in forestry's social licence.

5.87 The active management of plantations through thinning and pruning is central to viable plantations, and it relies on the professional expertise of foresters. It is unfortunate that some plantations have not been properly managed, and that the valuable timber and wood resource therein has not been fully utilised. The Committee values the professional expertise of foresters, and looks forward to seeing that expertise used to remedy some of the poor plantation management of the past.

5.88 A plantation can have a real impact on the local community. During one of its site inspections, the Committee was shown a small rural hamlet that was all but deserted, in part due to a new plantation. Social dislocation is not an inevitable result of plantation expansion, and there is no hard-and-fast rule about whether a plantation will be beneficial or detrimental. The

71 Submission 65, Timber Queensland, p.5.

72 Submission 35, Timber Communities Australia, p.9.

plantation sector of the forestry industry must make sure that it is actively engaged with local communities, in order to build trust and make sure that new plantations do not cause social dislocation.

Products and innovation

5.89 This inquiry's terms of reference include 'opportunities for diversification, value adding and product innovation'. Plantations are the source of many varied timber and wood-products, and there is potential for greater and more efficient production through innovation. As noted above by Associate Professor J. Doland Nichols, there are currently by-products of plantation thinning that do not have a market, and hence thinning is not always performed. To be strong, flexible and competitive well into the future, plantation forestry must find new and more efficient ways to process all resources coming out of plantations.

5.90 The submission from the Department of Agriculture, Fisheries and Forestry includes numerous examples of current research into 'diversification, value adding & product innovation', and many of these projects relate to plantation timber.[73] This research is vital as it is not possible to simply substitute plantation sawlogs for native forest sawlogs in all cases. For example, the shorter rotation of plantation logs means that they are much smaller than native forest logs. The CSIRO submission points out that native forest sawmills could not always process plantation sawlogs without mill changes. It continues:

> Substantial investment is required to modify sawing equipment and drying methods. Appropriately modified processing systems should be able to operate profitably while paying an acceptable log price to plantation growers.[74]

5.91 This was reiterated by Dr Glen Kile et al, who submitted that :

> ...the properties of the potential [plantation] sawlogs are different from the mature native forest resource and the current processing schedules and technology require further development to enable profitable processing.[75]

73 Submission 59, DAFF, Appendix C, pp.43-51.

74 Submission 39, CSIRO, p.9.

75 Submission 23, Dr Glen Kile et al, p.3.

5.92 And, as the CSIRO also notes, this kind of investment and innovation relies on the security of plantation sawlog supply.[76]

5.93 Some submissions criticised the perceived decline of investment in innovation, particularly in recent years. Dr Glen Kile et al claim that:

> The last decade and particularly the last five years have seen a steady decline in investment in forest and forest products research and development capability and capacity. This has occurred in all State Governments, CSIRO, and Universities and in industry. Short sighted cost cutting that targets research capability as the first target has become all too common.[77]

5.94 Professor Philip Evans describes five past 'innovations' were critical to the development of the forest products industry:

- chemical pulping of eucalypts;
- high temperature drying of pine;
- machine stress grading of pine;
- wood-fibre-reinforced cement composites; and
- advanced breeding and selection technology for pine.[78]

However, Professor Evans adds that 'many of the key elements of an 'innovation system' to support the forest products industry were once present in Australia. The same is not true today.'[79]

5.95 There are other trends that underline the need for continued innovation, including the declining value of woodchips,[80] the export of low value products and the import of high value products,[81] and the difficulty attracting investment to long-rotation plantations. According to evidence from Mr Michael Bayley, further innovation will enable plantation timber and wood-products to be of the highest value possible:

> In terms of a priority of plantation processing options we really should be prioritising sawn timber, followed up by engineered products, followed up by a pulp mill with a paper mill attached,

76 Submission 39, CSIRO, p.9.
77 Submission 23, Dr Glen Kile et al, p.6.
78 Submission 29, Professor Philip Evans, p.2.
79 Submission 29, Professor Philip Evans, p.2.
80 Submission 68, Future Farm Industries Cooperative Research Centre, p.1.
81 Submission 14, Mr Andrew Lang, p.2.

> followed up by a pulp mill for export pulp, export woodchips, then at the bottom of the barrel is whole log exports.[82]

5.96 In addition, many submissions and witnesses have mentioned the potential for plantation products to be used for energy production: this will be discussed in Chapter 7, below.

Committee Comment

5.97 The Committee has discussed innovation in many parts of this report, and it has an important role to play across the forestry industry. Evidence has frequently underlined the dynamic role that innovation plays: finding additional or new high-value uses for a plantation resource not only provides additional income (often long before the plantation is harvested) but it can also encourage better plantation management.

5.98 The Committee is keen to see innovation and new technologies developed and taken up across the forestry industry. New technologies including the use of lasers, processing methods for thinnings and prunings and other innovations will continue to make the industry more flexible, efficient and dyanamic.

5.99 The Committee believes that Australia should make every effort to export high-value products. This is an enormous challenge, particularly when Australian processors and manufacturers have foreign competitors with lower costs (and often lower standards). The forestry industry must rise to this challenge, so that Australia's plantations are not harvested merely for woodchips, which are the lowest value product. Ongoing innovation, driven and led by a competitive and forward-looking industry will ensure that Australia can produce better products in a more efficient way, helping to secure the long-term viability of plantation forestry in Australia.

5.100 Australian timbers are unique, and there will be increasing opportunities in future to develop and market specialty products grown in plantations. This will be an opportunity for diversification, giving the forestry industry additional products for both domestic and international markets.

5.101 Certification will also enable plantation forestry to increase the value of its products, gaining additional market access both in Australia and overseas. As noted in other parts of the report, certification provides assurance of the sustainability of timber and wood products, and certified plantation products will be more competitive in the marketplace.

82 Mr Michael Bayley, *Committee Hansard*, 1 June 2011, p.13.

5.102 The Committee understands the need for private investment in the forestry industry. Whilst MIS have lost support at the moment, there needs to be a means by which MIS or a new investment scheme can be developed, implemented and overseen to enable the expansion of medium- and long-rotation plantations around Australia.