

How are forests and plantations managed in Australia?

Wood Waste Bioenergy Information Sheet No. 4



Timber is a renewable resource, and even though we may not realise it, timber is a part of our everyday lives. The papers we read and write on, the floors we walk on, the houses we live in, and even the hygiene products we use, all come from timber.



Timber comes from our forests – both native forests and plantations that are established and managed primarily for wood production. In addition to providing the wood for our housing, furniture, paper and construction industries, our managed forests supply clean air and water, habitat for flora and fauna, and recreational opportunities for Australians.

To supply this vast array of forest products, there are different management systems with differing levels of intensity applied to the forests.

Timber from native forests

Australia's current forest practices are generally designed to mimic nature. The sustainable approach to harvesting and regeneration in native forests has evolved with the help of the knowledge, expertise and experiences built up by forest managers for more than 100 years¹.

For example, the tall eucalypt forests normally regenerate or re-grow following catastrophic wildfires, such as those seen in 1939, 1967 and 2003. Timber harvesting in the eucalypt forests replicates the same impacts as fire, but on a very small scale, by removing a high proportion of the trees in a harvested area, burning the debris, and re-seeding the area with seed taken from the site prior to harvest.

Dry eucalypt forests regenerate over a longer period of time, where younger trees emerge through 'gaps' in the forest. These gaps are left by older trees dying or fire. Best-practice harvesting in these forests mimics nature, as only a small proportion of older trees are removed at any one time. This process of selective harvesting allows light into the forest, providing the space to promote the growth of the younger trees that remain.



Key points

- *Australia's native forests and plantations are managed with differing levels of intensity, depending on the type of forest and the vast array of wood products harvested from the individual forests.*
- *Managing forests and plantations to produce wood for processing into timber products and producing biomass energy from wood waste are strongly complementary activities.*
- *Wood waste utilisation can be managed without having a negative impact on biodiversity.*
- *The well-planned removal of timber leaves behind a large volume of branches and logs, with differing amounts required in each forest and ecosystem to protect biodiversity and prevent nutrient and soil loss.*

Harvesting of high-value timber from native forests can provide the resources for furniture, flooring, decking, housing, construction, and for pulp and paper production. For example, Australia's eucalypt resources can be used to make the highest-quality photographic and copying papers in the world.

Timber from plantations

Timber plantations are discrete wood production systems, where trees are purposefully planted in rows and intensively managed in a manner that is similar to our food crops, such as wheat (only the trees are much taller!).

As the trees grow, they compete for light and nutrients at each site. To make sure the trees grow fast and straight with small branches, they are originally planted close together (at greater than 1,000 seedlings or stems per hectare). Some plantations are 'thinned'. This process promotes the growth of the remaining trees by allowing them to more effectively use the site's resources (light, water and nutrients).

Thinning is essential to maintain the health and productivity of plantations where they are purposefully managed to produce higher-quality timber products. Thinning creates timber for a range of markets, including pulp and paper products, wood-based panels (chipboard, medium density fibreboard), biomass for renewable energy, and small sawlogs.

Timber plantations require a significantly greater amount of management (or silviculture) than traditionally-managed native forests. These 'silvicultural' practices are designed to ensure the tree crops remain healthy by helping them to grow free from pests and diseases. As with other agricultural crops and low-intensity native forest timber production, these practices may include the use of fertilisers, the use of herbicides and the control of browsing animals and insects, to ensure the tree crops survive these threats and grow quickly enough to provide a commercial return for investors.

Timber for renewable energy

Timber harvesting in both native forests and plantations unfortunately generates wood waste. Some of this wood waste can be, and is currently, supplied as inputs to other timber processing facilities. However, the

high transport costs arising from the generally large distances between where the wood waste is grown and the low-grade wood markets significantly restrict the commercial opportunities for utilising this resource. As an alternative, the wood waste resources could be used for important activities, such as renewable energy generation and providing environmental benefits that include a permanent reduction in Australia's greenhouse gas emissions.

Australia has around 7 million green tonnes of wood waste potentially available each year to generate clean, green power². NAFI estimates that by effectively utilising these existing wood waste resources, Australia could produce enough electricity for around 400,000 homes and reduce our annual greenhouse gas emissions by 2.2 million tonnes³. This is equivalent to 20% of the nation's challenge to meet Australia's greenhouse gas reduction target for the period 2008-2012.

These estimates are consistent with the information obtained through the activities being completed by IEA Bioenergy Task 38⁴.

1. Report 3 – potential wood flows, technical and scale issues and identification of sustainable management criteria, p.9.
2. Fung, Kirschbaum, Raison and Stucley (2002) The potential for bioenergy production from Australian forests, its contribution to national greenhouse targets and recent developments in conversion processes, Biomass and Bioenergy 22: 223-236; Report 3 – potential wood flows, technical and scale issues and identification of sustainable management criteria.
3. [The Review of the Renewable Energy \(Electricity\) Act 2000](#) (National Association of Forest Industries and Australian Forest Growers, 2003) submission into the review of the Renewable Energy (Electricity) Act 2000.
4. Cowie (2005) Greenhouse gas balance of bioenergy systems based on integrated plantation forestry in northeast NSW, Australia (Bioenergy Australia 2005 Conference, Melbourne).



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