Institute of Foresters of Australia

VICTORIA'S FORESTS – THE KEY ISSUES

(August 2006)

The following information has been compiled specifically for those seeking an accurate understanding of the issues surrounding the production of wood from Victoria's public native forests.

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1. Victoria's forests - timber production in perspective

1.1 Total forest area

Victoria has almost 8 million hectares of native forest of which over 83% is located on public Crown land.

Table 1.1 Victoria's native forests[1]

Land Tenure		Area	Proportion of Total
Public Land	State Forests	3,312,000 ha.	41.9 %
	National Parks & conservation reserves	3,050,000 ha.	38.5 %
	Leasehold and other Crown Land	253,000 ha.	3.2 %
Public Land Sub-Total		**6,615,000 ha.**	**83.6 %**
Private Land		1,298,000 ha.	16.4 %
Total		**7,913,000 ha.**	**100 %**

1.2 Public forest available and suitable for timber production

Timber production is excluded from all National Parks and conservation reserves. In State Forests it is permitted in designated zones, but actually only occurs in parts of these zones that are suitably productive and accessible.

- As at February 2002, a net 740,000 hectares of Victoria's public forests were available and suitable for sustainable wood production. This comprised 11.2% of Victoria's 6.615 million hectares of public native forest. [2]

- Designated wood production forests are to be harvested sustainably on an 80 - 100 year cycle (depending on forest type). The area of Victorian public native forest annually harvested and regenerated equates to approximately 0.0012 of the total forest area.

- Since 2002, the proportion of Victoria's public forests effectively being managed for timber production has fallen below 10%. This is due to the declaration of the 103,000 ha. Great Otway National Park in December 2005 and the government buy-back of sawlog licences from the Portland, Mildura, East Gippsland, and Midlands Forest Management Areas.

- Victoria has a Sustainability Charter for State Forests that recognises that we have a responsibility to sustainably manage our forests and to minimise impacts on threatened forest communities in other less regulated jurisdictions. It should be recognised that timber sourced from Victoria's public forests is of high quality and should be promoted as a sustainable, durable and often unique product.[3] There

[1] *Victoria's State of the Forests Report, 2003*, Chapter 2 (p.52), Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

[2] *Victoria's State of the Forests Report, 2003*, Chapter 2 (p.52), Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

[3] *Sustainability Charter for Victoria's State forests, 2006*. Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/sfm/

are plans to have this verified by independent third party certification audits - 43 % of Australia's forests and plantations are already certified as well managed.

- Current investigations by the Victorian Environmental Assessment Council (VEAC) into the central Murray Red Gum forests and the Goolengook Forest Block in East Gippsland may further reduce the area available for timber production.

- The current licensed sawlog harvest of approximately 530,000m^3/annum is expected to progressively decline until 2015/16.[4] Annual timber production is now substantially lower than the biological sustainable yield of Victoria's forests. In other words our forests are growing much faster than they are being harvested.

1.3 Forests never to be harvested

Arguably, the most pertinent statistic about Victorian native forest timber production is the huge proportion of forest that will not be harvested. This puts claims about the environmental impacts of logging into perspective.

- As at 2002, almost 89% of Victoria's public forests were never to be harvested or not to be harvested again (at least 100,000 ha of it has been logged and regenerated in the past).[5] The national standard for forest conservation is to protect 15% of each forest type and the international standard is to protect 10%. Victoria significantly meets and exceeds these targets.

Table 1.2 Areas of Victoria's public native forests never to be harvested (as at 2002)[6]

Public forest tenure		**Not available for timber production**	**% of total public forest**
National Parks & conservation reserves		3,050,000 ha.	46.2 %
State Forest	Special Protection Zone	2,663,000 ha.	40.2%
	Special Management Zone		
	Code of Practice operational reserves		
	Unproductive forests		
	Inaccessible forests		
	Steep and rocky ground		
	Roads		
Leasehold and other Crown Land		162,000 ha.	2.4%
Total public forest never to be harvested		**5,875,000 ha.**	**88.8%**

- Over the past twenty years, the area National Parks and other formal conservation reserves (forested and non-forested) increased from 1.3 mill. ha in 1984[7] to approximately 4.1 mill. ha in 2006.[8]

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[4] *Victoria's Forest Industries – An Economic Impact Assessment*, prepared by The Allen Consulting Group for the Victorian Association of Forest Industries (March 2006).

[5] *Victoria's State of the Forests Report, 2003*, Chapter 2 (p.54), Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

[6] *Victoria's State of the Forests Report, 2003*, Chapter 2 (p.52), Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

2. Do we need to log native forests?

The notion that there is now no need to log native forests has become a fundamental plank of environmental campaigns in recent years. The veracity of this claim needs to be considered alongside the following facts:

2.1 Hardwood versus softwood

It is important to appreciate the differences between hardwood and softwood in order to understand the nature of wood consumption that drives timber production.

- Native forests and eucalypt plantations are harvested for hardwood. Radiata pine plantations produce softwood.

- Until the late-1980's, Australia's sawn wood requirements were primarily met by native forest hardwood.[9]

- Australia's softwood plantations were mostly established by clearing areas of public native forest during the 1960's and 70's to meet a pre-determined target area thought necessary to address growing demands for forest products.[10]

- As pine plantations have progressively matured from the late 1980's, softwood timber has, as expected, progressively replaced native forest hardwood in low and moderate value uses. This has helped enable the native forest harvest to be progressively reduced to meet increased community expectations of environmental conservation.

- While harvest volumes from native forests are decreasing, the domestic demand for hardwood is expected to remain at current levels or even increase. This is strengthening demand for hardwood imports, some of which is suspected of being from illegal rainforest logging.[11]

2.2 Sawn wood production and consumption

- In 2003-04 Australians consumed about 4.69 million m^3 of sawn timber, of which about 1.1 million m^3 (~24%) was hardwood. This represents a steady decline from the approximately 3 million m^3 of native forest hardwood sawn timber annually consumed in the 1960's.[12]

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[7] *State of the Environment in Australia, 1985*. Department of Arts, Heritage and the Environment (Table 18, p.122).

[8] Parks Victoria, www.parkweb.vic.gov.au/aboutus/

[9] *Eucalypt Plantations for Solid Wood Products in Australia – A Review* (Table 3.2, p.10). Project No. PN04.3002, prepared for the Forest & Wood Products Research and Development Corporation by Nolan et al. (2005). Available at www.fwprdc.org.au/

[10] In 1964, the Australian Forestry Council committed to an ambitious national target of 1.2 million hectares of softwood plantation by 2000. This created the urgency to dramatically accelerate the pace of plantation development in the 1960s and 70s.

[11] *Overview of Illegal Logging*, prepared for the Australian Government by Jaako Poyry Consulting (September 2005). Can be downloaded from www.vafi.org.au/research

[12] *Eucalypt Plantations for Solid Wood Products in Australia – A Review*, Project No. PN04.3002, prepared for the Forest & Wood Products Research and Development Corporation by Nolan et al. (2005). Available at www.fwprdc.org.au/

- In 2003-04, about 76% of Australian sawn wood consumption was being met by softwood harvested from pine plantations. This included 437,000 m^3 (~12%) of imported softwood timber, mostly from New Zealand[13]. We are not yet self sufficient in softwood timber.

- Softwood product substitution is now thought to have stabilised as native forest hardwood has become limited to higher value uses where it has a market advantage over plantation softwood and engineered softwood composite products. There continues to be strong market demand for native forest hardwood for flooring, decking, cabinet making, furniture and other external uses where appearance and durability is important.[14]

2.3 Woodchips and firewood

- Despite now being primarily required for high value uses, native forest harvesting continues to produce substantial volumes of commodities such as woodchips. These are derived from sub–sawlog quality timber during harvesting (ie. small, bendy, and defective logs and large branches) and waste wood during sawmilling (ie. slabs and off-cuts from processing round logs into rectangular pieces).

- The high volume of these products owes much to the inherently variable growth habits of Australian eucalypts which dictates that even in the most productive forest types, at least half of the standing volume is generally unsuitable for sawn timber production.

- Woodchips and firewood fulfil important community needs. Woodchips are used for paper product manufacture either domestically or in Japan – an important role for a country that is amongst the world's top five consumers of paper products. Firewood is an important rural heating source.

- Markets for residual products, such as woodchips or firewood, are also an invaluable management tool that can effectively fund silvicultural treatments such as regrowth (or ecological) thinning that promote improved forest health and productivity.

- Victoria has around 168,000 hectares of eucalypt plantations.[15] Around 90% are being grown specifically for the export woodchip market.[16] Large scale eucalypt plantation establishment began in the mid-1990's in south western Victoria via the advent of Managed Investment Schemes. Substantial volumes of woodchips are expected to come on-stream from these planatations in the next few years.

- For some, this has created an expectation that woodchip production from native forests should cease. However on-going sustainable native forest harvesting for sawlogs will continue to generate waste wood suitable for export woodchips. As steady world demand for paper products is unlikely to abate, it would be illogical to restrict native forest woodchip sales simply because plantations are producing substantial woodchip volumes.

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[13] *Australian Forest and Wood Product Statistics.2004.* prepared by ABARE. Available at www.abareconomics.com.

[14] *Timber Market Survey – 2005*, prepared by URS Forestry for Forests NSW.

[15] *National Plantation Inventory Australia – 2005 Update*. Department of Agriculture Fisheries and Forestry (Bureau of Rural Sciences / Natioanl Forest Inventory / National Heritage Trust). Available at www.affa.gov.au/

[16] *Plantations of Australia – 2001*. Wood et al, Department of Agriculture, Fisheries and Forestry Australia (Bureau of Rural Sciences / National Heritage Trust / National Forest Inventory).

2.4 Plantations – can they meet all our requirements?

Transitioning eastern Victoria's native hardwood timber industry to a plantations-based industry is being promoted as the way to exit from native forest logging with minimal socio-economic damage to rural communities. However, it is generally based on a presumption that all wood requirements can be met from softwood plantations despite durable hardwood being preferred for many uses.

- The mostly simplistic promotion of plantations as an alternative source of timber has created considerable confusion by failing to distinguish between plantation types (ie. softwood or hardwood), what they are grown for (ie. solid wood products or pulp & paper), and their management (ie. short or long rotation lengths).

- As the primary reason for harvesting native forests is to produce hardwood sawn timber, there would need to be a substantial area of eucalypt plantations being grown on good land for at least 25 – 30 years in order to replace what is being currently being produced from native forests.

- Although Victoria has 168,000 hectares of hardwood (mostly eucalypt) plantation, most is being grown specifically on short 10 – 15 year rotations for export woodchips. Only about 10% of these plantations (mature or otherwise) are being grown longer to produce hardwood sawn timber.[17]

- In 2003, about 107,000 hectares (or just 17.4%) of hardwood plantations in the largest six of Australia's National Plantation Inventory (NPI) regions were being managed specifically for sawlogs.[18]

- In eastern Victoria's Gippsland region, there were 13,900 hectares of hardwood plantation being grown and managed for sawn timber production in 2003. The oldest plantings in the Strzelecki Ranges are already being harvested and replanted by Hancock Victorian Plantations Pty. Ltd. In 2003, approximately 4750 hectares (or 34%) of this plantation sawlog resource was less than 3 years old.[19]

- The Victorian Labour Party's 2006 environment policy commits it to purchasing several thousand hectares of the remaining mature hardwood sawlog plantation in the Strzelecki Ranges to create a National Park. This will further reduce the plantation resource available to the hardwood sawn timber industry.

- Gippsland's hardwood sawlog plantations are obviously a completely inadequate resource on which to transfer the region's native forest timber industry which currently produces a sustainable 280,000 m^3 of hardwood sawlog from a net available and suitable forest area of approximately 380,000 hectares.[20]

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[17] National Plantation Inventory Australia – 2005 Update. Department of Agriculture Fisheries and Forestry (Bureau of Rural Sciences / Natioanl Forest Inventory / National Heritage Trust). Available at www.affa.gov.au/

[18] *Eucalypt Plantations for Solid Wood Products in Australia – A Review*, (Section 4.2, pp.14, 15). Project No. PN04.3002, prepared for the Forest & Wood Products Research and Development Corporation by Nolan et al. (2005). Available at www.fwprdc.org.au/

[19] *Eucalypt Plantations for Solid Wood Products in Australia – A Review*, (Table 4.2, p.15). Project No. PN04.3002, prepared for the Forest & Wood Products Research and Development Corporation by Nolan et al. (2005). Available at www.fwprdc.org.au/

[20] Tambo, East Gippsland, and Central Gippsland FMA Fact Sheets, *Our Forests Our Futuer*, government policy, Department of Sustainability & Environment, February 2002.

- Nationally, the most recent government review predicts that by 2035, hardwood sawlog availability from plantations will make up less than 15% of the 2001 native forest supply level unless there are immediate substantial new plantings.[21]

- Substantial new plantings are unlikely until impediments to corporate investment in long rotation plantations are addressed. With respect to hardwoods, there remains considerable uncertainty about long term plantation productivity, product quality, availability of suitable processing infrastructure, and future market acceptance of plantation-grown timber. Even if investors are able to reconcile themselves to these risks, the long wait for the final return is a further major disincentive.[22]

- There is an expectation that a developing market for environmental services (or ecosystem services) will improve the commercial viability of growing hardwood sawlogs by generating annual cash flows in return for benefits such as salinity mitigation, habitat and biodiversity protection, and carbon sequestration. The process of evaluating and quantifying environmental services is currently in the research and development phase.[23]

- In the absence of corporate investment, the Victorian government has encouraged plantation expansion over the past decade by offering landowner incentives for farm forestry. Since 1996, this has resulted in approximately 500 hectares/year of widely scattered, mostly very small plantings of a variety of species on mostly marginal sites.

- Although these plantings are environmentally beneficial, they are being managed by owners with widely variable management aims. It seems likely that a significant proportion of these small woodlots will never be harvested for timber, instead being retained for their environmental and aesthetic impact on lifestyle and property values.

- That many farm plantings will be unavailable to the timber industry is supported by the reality that 50% of Australian rural properties change ownership every 10 years, creating a likelihood that the originally committed tree-grower will no longer be around when the plantation matures.[24]

- Even if there was an immediate substantial investment in private plantation development, Victoria is at least 30 years away from having a hardwood plantation sawlog resource capable of supporting a significant viable timber industry. Such plantations, established largely with different species to those commonly available from native forests, would ideally compliment (rather than replace) native forest timber to increase environmental and economic benefits.

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[21] *Eucalypt Plantations for Solid Wood Products in Australia – A Review*, (Executive Summary, p.iv). Project No. PN04.3002, prepared for the Forest & Wood Products Research and Development Corporation by Nolan et al. (2005). Available at www.fwprdc.org.au/

[22] *Impediments to Investment in Long Rotation Timber Plantations*, Project No. PN05.1011, prepared for the Forest & Wood Products Research and Development Corporation by Kelly et al. (2005). Available at www.fwprdc.org.au/

[23] *The Markets for Ecosystem Services Project* is being managed by CSIRO Sustainable Ecosystems in partnership with the Rural Industries and Research & Development Corporation, and the Joint Venture Agroforestry Program amongst others. It includes case studies conducted in catchments in Victoria, NSW, and Western Australia. www.ecosystemservicesproject.org/ (accessed January 2005).

[24] *Australia – Our Natural Resources - At a Glance*, Australian Government, Department of Agriculture, Fisheries and Forestry, National Landcare Program, 2004. Available at www.daff.gov.au

3. Environmental issues arising from native forest logging

The major environmental issues currently surrounding the on-going production of timber from Victoria's native forests are concerns over biodiversity conservation, in particular, 'old growth' forest and Victoria's faunal emblem Leadbeater's Possum; as well the effect of logging in water supply catchments, and implications for global warming.

3.1 'Old growth' forest – what is it and how threatened is it?

- 'Old growth' forest is essentially comprised of over-mature and senescent trees nearing the end of their life. The dead and dying tops and upper branches of these large old trees provide enhanced wildlife habitat – particularly for arboreal mammals and hollow-nesting birds.

- Although it has attained an iconic status based on images of tall open forest growing in wet mountainous regions, 'old growth' occurs in all forest types including low stunted stands growing on steep, dry northern aspects.

- The most iconic 'old growth' wet forest is a successional precursor to rainforest climax vegetation. That is, if left undisturbed to eventually die, the large eucalypt trees will eventually be replaced by non-eucalypt rainforest dominated by species such as Myrtle Beech. Therefore, merely reserving 'old growth' forest will not save it from eventually disappearing.

- Particularly in wet forest types, large 'old growth' trees are highly productive sources of a range of timber products. In East Gippsland, 'old growth' forest comprises around 40% of the available and suitable timber resource.[25]

- Victoria's public native forests contain 841,000 hectares of 'old growth' of which 68% is in formal and informal reserves and will never be logged.[26]

- The area of 'old growth' forest in Victoria is projected to increase substantially during the next century. *Victoria's State of the Forests Report, 2003* reports that there is 1.676 million hectares of mature forest (80+ years old) in parks and conservation reserves, whilst more than 1.5 million hectares of mature forest contained within State Forest is unavailable for timber harvesting and will potentially also grow into 'old growth' forest.[27]

- Disturbance from severe fire will be the greatest determinant of whether this mature forest reaches 'old growth' stage. The 2003 bushfires that severely burnt many parts of north eastern and eastern Victoria may have affected the area of 'old growth' forest reported in 2001/02.

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[25] *Victoria's Forest Industries – An Economic Impact Assessment*, prepared by The Allen Consulting Group for the Victorian Association of Forest Industries (March 2006).

[26] *Science for Decision Makers, Old Growth Forests in Australia, Conservation status and significance for timber production. March 2004.*. Bureau of Rural Sciences Available at www.affa.gov.au/brs

[27] *Victoria's State of the Forests Report, 2003* (Chapter 2, p.54, Table 2.2), Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

3.2 Biodiversity, fire and timber production (inc. Leadbeater's Possum)

- The Victorian Flora and Fauna Guarantee Act 1988 – Section 10 - listed nearly 250 species as having threatened status. Of these, less than 20% were forest dwelling – including Leadbeater's Possum and the Eastern Quoll. The FFG Act 1988 also determined the major threatening processes to be agricultural and urban development, and introduced species.

- Since 1986, the proportion of Victoria's public native forests available for timber production has fallen by approximately 70%. In addition, the Code of Forest Practices has increased the attention given to reducing operational impacts on biodiversity through enforcing measures such as the greater retention of habitat trees and wildlife corridors.

- By 2003, the *Australia, State of the Forests, 2003* report did not consider timber production to be a process or agent that was impacting on forest ecosystem health or vitality in any Australian state or territory. [28]

- As around 90% of Victoria's forests are already effectively reserved, it is difficult to accept that adding the other 10% of forest (currently in designated wood production zones) to the conservation reserve network will significantly further improve biodiversity conservation.

- Indeed, scattered timber harvesting in a portion of our native forests is thought to have a positive impact by creating a mosaic of regenerating and mature age classes that broadens habitat diversity.[29]

- The greatest threats to forest biodiversity are now from severe fire, feral animals (ie. cats, foxes) and introduced weeds such as blackberry. Actively managing these threats is critical. Although the public perception is that creating parks and reserves benefits the environment, on its own it does nothing to address these threats.

- There is concern over the long term survival of Victoria's faunal emblem, the Leadbeater's Possum. It was thought to be extinct from 1920 to 1961, but has since re-emerged in the Central Highlands as suitable habitat developed amongst ash eucalypt regrowth from the 1939 bushfires.

- Although environmentalists have concerns that the progressive logging of this 1939 ash regrowth has potential to directly threaten the Possum, the Department of Sustainability & Environment (DSE) has developed a detailed Leadbeater's Possum Management Plan specifically to ensure that sufficient prime habitat for the species is retained. [30]

- The leading scientific expert on Leadbeater's Possum (Dr. David Lindenmayer) does not believe that logging should be stopped in the available ash forests largely because, in the prolonged absence of

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[28] *Australia, State of the Forests Report ,2003* (Chapter 3.1, p.136, Table 59). Bureau of Rural Sciences / National Forest Inventory. Available at www.affa.gov.au/stateoftheforests

[29] *Forest Utilisation and the Flora and Fauna of the Boola Boola State Forest in South Eastern Victoria*, by R. Loyn, M. McFarlane, E.Chesterfield, J.Harris, Forests Commission Victoria, Bulletin No. 28 (1980).

[30] Leadbeater's Possum Management Plan is not available on-line. However the science underpinning the Plan can be obtained from the Department of Sustainability & Environments *Flora & Fauna Guarantee Action Statement No. 62 – Leadbeater's Possum* (1995). This can be viewed via www.dse.vic.gov.au/

severe fire, logging disturbance is the only means of recreating the ash regrowth habitat most preferred by the species.

- Dr. Lindenmayer is currently undertaking research in conjunction with the Department and the timber industry to design a logging system that best recreates the possum's need for large old nest trees scattered amongst advanced regrowth of eucalypts and acacias.

- It is also important to appreciate that more than 60% of the Central Highlands ash forests are either formally or effectively reserved and will not be harvested.[31] In the prolonged absence of fire or other regrowth-initiating disturbance, these areas will eventually become unsuitable for Leadbeater's Possum.

3.3 Water and timber production - Melbourne's catchments

All forests occupy catchments. Accordingly, considerations of water quality and yield have always been integral to good forest management. As community awareness about water has grown in recent years, there has been a particular focus on the management of Melbourne's forested water catchments.

- Melbourne's water supply is mostly captured from 157,000 hectares of forested catchments located primarily in high rainfall areas north and east of the city. [32] Most of these catchments are closed to human access or are National Park where human activity is tightly restricted. Melbourne is reportedly one of only five cities in the world to have such protected catchments.[33]

- Just 12.8% of Melbourne's water supply catchments are available and suitable for limited timber harvesting tightly controlled in conjunction with the Code of Forest Practices. The average annual harvested area equates to approximately 0.0018 of the total catchment area.[34]

- Although there has been limited logging in its catchments for over 50 years, the CRC for Water Quality and Treatment regards the quality of Melbourne's water supply as amongst the world's best.[35]

- Concerns have arisen regarding reduced water flows into dams caused by vigorously growing regeneration resulting from timber harvesting. Catchment research over many years confirms that regrowth arising from natural or artificial disturbance uses more water than older, mature forests.

- In Melbourne's catchments, it has been estimated that phasing out logging from the Thomson Dam catchment by 2020 would result in a saving of 20 GL of water by 2050.[36] This is equivalent to 4% of current water usage. Predictions like this are based on an unrealistic assumption that the whole

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[31] *Central Highlands Regional Forest Agreement* (1998), Attachment 2, Table 2 outlined the areas of formal and informal reserves. Since then there has been found to be a substantial area of unplanned reserves – such as buffers on unmapped streams as described in the *Estimate of Sawlog Resources, Central Highlands FMA*, Department of Natural Resources & Environment (2002).

[32] Melbourne Water website, www.melbournewater.com.au/

[33] Melbourne Water website, www.melbournewater.com.au/

[34] *Catchment Timber Substitution Study*, prepared by URS Forestry for the Water Resources Strategy Committee for the Melbourne Area (May 2002).

[35] CRC for Water Quality and Treatment website, www.waterquality.crc.org.au/media_success.htm

[36] *Strategy directions report: Stage 2 in developing a water resources strategy for the greater Melbourne area*, Water Resources Strategy Committee for the Melbourne Area (2002).

catchment is 'old growth' forest and will remain so in perpetuity. This relies on an unlikely absence of natural disturbance such as severe fire. However, the probability of a major fire occurring in the Thomson catchment during any 100 year period is estimated to be 94% (or almost certain).[37]

- Severe fire that initiates a large scale regrowth event is by far the greatest threat to both the quality and future quantity of Melbourne's water supply. Indeed, the effects of the greater water use of regrowth from the 1939 Black Friday fires are still being reflected in catchment stream flows.

- Compared to scattered small patches of logging regrowth staggered spatially and in time across decades, large scale severe fire can in a matter of days kill huge areas of forest sparking massive regrowth events. In addition, because fires burn everything in their path they can have a massive impact on water quality compared to logging conducted with constraints such as protective streamside buffers.

- A recent example was the 2003 fires in north eastern Victoria that burnt through 1.1 million hectares of forest in just a 2 month period. The most severely burnt areas have initiated regrowth equivalent to roughly 15 years of clearfell logging and 80 years of selective logging based on current statewide harvesting rates. It has been predicted that regenerating trees in the most severely burnt half of the area, will absorb up to 430 GL of water per annum in the Murray River headwaters until 2050.[38]

- In terms of water quality, in the year following the 2003 fires there was an estimated 8-fold increase in sediment and phosphorous entering streams flowing from burnt catchments, with an additional 220,000 tonnes of sediment being transported into Victoria's Gippsland Lakes alone.[39]

- Active forest management offers tremendous opportunities to improve water production. Widespread thinning of the 1939 fire regrowth wherever it is accessible as well as progressive thinning of more recent logging regrowth could decrease rainwater interception and increase stream flows into dams.

- The relationship between stand manipulation and stream flow has been confirmed by hydrological research conducted throughout Australia. One 1980s trial of strip thinning in 43 year old ash regrowth in Melbourne Water's North Maroondah experimental area produced increased run-off equating to 2.5 ML per year for each hectare of thinned forest.[40] This immediately increased stream flow by 26% which was persisting 10 years later.[41]

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[37] *Wood, Water and Wildfire – their inter-relationship in the forests of Victoria's Central Highlands*, by J.Opie (1997). Paper prepared as a response to the Central Highlands CRA Report of the Regional Forests Agreement Steering Committee.

[38] Prediction attributed to the Cooperative Research Centre for Catchment Hydrology (2003), in the National Association of Forest Industries / Timber Communities Australia joint submission to the National Water Initiative, April 2004.

[39] *Impacts of bushfires on catchment water quality: first year results*, by GJ .Sheridan, PN. Lane, P. Noske, P. McKenna, and J. Costenaro. In Proceedings of Forest Management Workshop, Canberra, 23-25 March 2004.

[40] *The Effects of Strip Thinning on Forest Growth in the Ettercon Catchments*, Report No. MMBW-W-0019, by RG. Benyon, Melbourne Water (1992).

[41] *The Crotty Creek Project: The effects of strip thinning Eucalyptus regnans on forest growth and water yield*, by Benyon and Lucas, Department of Conservation and Natural Resources Forest Service Research Report No. 358 / Melbourne Water Report No. MMBW-W-0020 (1993).

- If the community is serious about optimising water production from its forested catchments, it should be embracing active forest management. As well as taking advantage of opportunities to manipulate stream flows, it maintains a skilled workforce best able to manage the critical fire threat.

3.4 Global warming and timber production

Timber production from either plantations or native forests offers tremendous opportunities to combat global warming by storing and capturing carbon and thereby reducing CO_2 emissions.

- Native forests are a renewable resource and when harvested results in carbon storage in wood products, and stimulates post-logging regeneration that sequesters and stores atmospheric carbon as it grows.

- The Australian Greenhouse Office (AGO) nominates a 90 year service life for hardwood flooring and furniture, although experience suggests that hardwood is capable of storing carbon for considerably longer. Even paper and cardboard stores large quantities of carbon although most has a much shorter working life. In addition, it is estimated that carbon is stored for up to 70 years in hardwood stumps and 25 years in coarse roots left in-situ after timber harvesting.[42]

- Concerns that logging enhances global warming by releasing carbon previously stored in mature trees are erroneous in the Australian context where logged coupes are immediately regenerated. Logging transfers stem wood carbon into storage in a range of wood products, whilst carbon stored in stumps and roots is retained on site. Although some carbon may be lost in subsequent burning of harvesting waste, this is minor relative to the capture and storage of carbon by vigorous post-logging regrowth.

- Timber production also has associated carbon emissions from the use of fossil fuels by harvesting machinery and log trucks, and electric and diesel power use in processing plants. However, studies by the Australian Greenhouse Office show this as a very minor loss relative to the gain in carbon storage.

- The positive growth in carbon storage resulting from timber production is supported by US findings that annual additions to carbon storage in wood and paper products (net of emissions from decay and burning) are growing and expected to reach 74 Tg (x 10^6 metric tones) per annum by 2040.[43]

[42] *LifeCycle Assessment of Greenhouse Gas Emissions from Domestic Woodheating – Greenhouse Gas Emissions from Firewood Production Systems*, Preapared for the Australian Greenhouse Office and Environment Australia by CSIRO Forestry and Forest Products (2003).

[43] *Carbon cycling through wood products: The role of wood and paper products in carbon sequestration*, by Skog and Nicholson, Forest Products Journal, Vo. 48: 75-83 (1998).

4. Benefits of continuing to harvest Victoria's forests

There are tremendous environmental and social benefits associated with producing wood products from Victoria's native forests. Even if the wood supply imperative could be removed by plantation timber or engineered composite wood products, there are sound environmental and social reasons to continue to sustainably harvest a portion of our forests.

4.1 Maintained capacity to manage environmental threats – particularly fire

- The greatest threats to the integrity of Victoria's public native forests are from severe fire, feral animals (ie, foxes, cats, dogs) and introduced weeds such as blackberry. Actively addressing these threats requires a substantial, well-funded and experienced workforce.

- There is an acknowledged strong link between the ability to actively manage forests and the production of timber which raises government revenue and maintains skilled workforces, particularly with respect to fire prevention and suppression.[44]

- In 2002/03, $45 million of government revenue was raised from timber royalties and roading fees.[45] Without this income stream, forest management would be largely reliant on a government budget already being strained by demands for arguably more pressing social concerns such as health, education, and law and order.

- The importance of this is underscored by the acknowledged drastic under-funding of Victoria's burgeoning area of National Parks and conservation reserves.[46]

- As Victorian native forest timber production has declined – particularly since 2001 - there has been a notable decline in the numbers of experienced forestry personnel involved in broad scale forest and fire management and a reduced economic imperative to conduct fire prevention works. This may be being reflected by the DSE's recent inability to meet fuel reduction burning targets and difficulty in controlling a series of devastating outbreaks in the iconic Alpine, Wilson's Promontory, and Grampians National Parks since the 2002/03 season.[47]

- Unnaturally ferocious large fires have by far the greatest potential to seriously damage biodiversity - including 'old growth' and iconic flora and fauna – and adversely impact on water quality and future quantity.

- Maintaining the ability to minimize their occurrence and ferocity is a key to retaining the integrity of Victoria's forested ecosystems. Continuing to sustainably harvest a significant portion of Victoria's forests provides undeniable benefits by driving active forest and fire management.

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[44] Mr. Phil Cheney, principal fire research scientist, Division of Forestry & Forest Products, CSIRO. From evidence cited in paragraph 6.5. p.189, Chapter 3, *A Nation Charred: Federal Inquiry into the Recent Australian Bushfires* (November 2003).

[45] *Victoria's State of the Forests Report, 2003* (Chapter 6) Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

[46] *Choosing a Future for Victoria's forests*, Victorian Forest Alliance (June 2006).

[47] *The Facts Behind the Fire – A scientific and technical review of the circumstances surrounding the 2003 Victorian bushfire crisis*, complied by Dexter and Hodgson, Forest Fire Victoria (2005).

4.2 Decreased global warming – more carbon stored and lower use of non-wood substitutes

- Maintaining timber production from Victoria's forests has a two-fold affect on global warming – it maintains the potential for enhanced storage of carbon in wood products and post-logging regrowth; and it reduces demand for non-wood substitutes such as steel, concrete, and aluminium that embody large carbon emissions in their manufacture.

- The contribution of current levels of Victorian native hardwood timber production to the fight against global warming is substantial. Assuming combined annual sawlog and residual log production of 1.5 million m^3, an estimated 730,000 tonnes of carbon is stored annually in vigorous new regrowth established following timber harvesting.

- This is independent of the transfer of the carbon already stored in the standing trees into wood products, and the retention of other already stored carbon in stumps and roots. Although there are small losses of carbon from burning harvesting debris and via emissions from logging machinery, trucks, and during log processing; this is dwarfed by the carbon captured and stored by regrowth.

- The above regrowth carbon storage estimate is based on extrapolation from a recent desk-top study based on Australian Greenhouse Office data applied to the sustainable annual harvest of 32,500 m^3 of Red Gum logs to produce a variety of wood products from a forest growing very slowly at less than 1 m^3/ha./yr.[48]

- The reduced availability of durable solid hardwood products is thought to be already increasing demand for non-wood substitute products made from steel, aluminium or concrete. In addition, political campaigns to 'save' forests may also be a factor in the recent decision by the Australian Rail Track Corporation (ARTC) to conduct future track upgrades using 400,000 concrete sleepers per year in preference to traditional wooden sleepers.

- Decisions such as this can make a massive contribution to global warming because of the far greater carbon emissions associated with the manufacture of these products. For example, compared to processing the same unit of wood, steel manufacture emits 350 times more carbon from fossil fuel-derived energy. Aluminium is worse – emitting 1466 times more carbon, and concrete 6.4 times more than processing the same unit of wood.[49]

- The Australian-developed Building Material Assessment System (BMAS), based on life-cycle analysis, rates the environmental impact of using concrete slab floors as being almost double that of elevated timber flooring.[50]

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[48] *Water, Wood & Wildlife: Opportunities for the Riverain Red Gum Forests of the Central Murray*, by Dexter and Poynter (Appendix 4.1). Submission to the VEAC River Red Gum Forests Investigation (unpublished - October 2005).

[49] *Greenhouse and the Environment – comparisons of timber with alternative materials*, Sustainable Timber Industry Coalition, www.stic.org.au

[50] *Environmental impacts of building materials*, by Bill Lawson, School of Architecture, University of NSW. Contained in the RIC Good Wood Guide, viewed at www.rainforestinfo.org.au

- It is estimated that the ARTC preference for 400,000 concrete sleepers per annum will contribute an estimated additional 192,000 tonnes of carbon dioxide per year towards global warming. This will be comprised of the lost potential carbon storage in forest regrowth if wooden sleepers had been used, plus the additional carbon emissions from concrete manufacture.

- If the Victorian government is serious about reducing global warming, it will at least maintain current levels of hardwood timber production.

4.3 Reduced exploitation of tropical rainforests

- Since 2001, Australia's native forest harvest has been substantially reduced. In the absence of suitable plantations, demand for hardwood sawn timber is now increasingly being met from imported timbers often illegally harvested from south east Asian rainforests.

- Rainforest sawn timber imports have increased by 50% since 2001 to 133,000 m^3.[51] More than half of these imports are judged as having a high probability of being sourced from illegal logging.[52]

- Of all forest product imports from south east Asian countries, approximately 232,000 m^3 is judged to be from suspect origins.[53] When converted to round log equivalent, imported forest produce suspected of being from illegal logging now exceeds Victoria's annual native forest sawlog harvest.

- Increased imports of rainforest timber are strongly correlated to the reduced market availability of locally-grown, dark coloured durable hardwoods. In particular, the WA government's reduction of the annual harvest of Jarrah and Karri by 60% since 2001 appears to have been a critical factor in the recent growth of tropical timber imports.

- Imported rainforest sawn timbers now comprise about 12% of Australia's hardwood sawn timber consumption. This is expected to grow, particularly if the availability of locally-produced durable dark timbers (ie. Jarrah. Karri, Red Gum and Ironbark) was to be further reduced by government policies.

- Currently, the NSW and Victorian governments are considering the future of forests that sustainably supply most of Australia's production of Red Gum. As this is another dark, durable species, reducing its availability is likely to further promote suspect tropical timber imports.

- Illegally harvesting tropical forests is contributing to environmental degradation in developing countries. It is also causing massive social problems by lowering prices that disadvantage legal operators, and by reducing government revenue that could be used to address endemic poverty.

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[51] Australian Forest and Wood Product Statistics, September – December Quarters 2005, Australian Bureau of Agricultural and Resource Economics (ABARE), May, 2006.

[52] *Overview of Illegal Logging*, prepared for the Australian Government by Jaako Poyry Consulting (September 2005). Can be downloaded from www.vafi.org.au/research

[53] *Overview of Illegal Logging*, prepared for the Australian Government by Jaako Poyry Consulting (September 2005). Can be downloaded from www.vafi.org.au/research

4.4 Socio-economic benefits and the eco-tourism alternative

- Victoria's native forest timber industry produces forest products demanded by the community and provides substantial socio-economic benefits, particularly in rural communities. It has an annual output valued at $1215 million and directly employs 7800 people, including those engaged in manufacturing in metropolitan Melbourne.[54]

- If native forest timber production was to cease, the greatest socio-economic impact would be in rural communities where opportunities for alternative employment are generally scarce.

- Environmental groups are advocating forest-based eco-tourism primarily involving passive recreation (eg. bushwalking) as a viable socio-economic alternative to the hardwood timber industry in rural regions. They portray tourism growth as being dependent on the closure of local timber industries.

- However, there are already substantially developed opportunities for passive forest-based eco-tourism in both in Victoria's parks and reserves, and within State Forests.

- In 2003, across all forested land tenures, there were 1362 designated recreation sites and 1235 walking trails of various lengths. About 24% of recreation sites and 11% of walking trails were located in multiple use State Forests where tourism has for decades successfully co-existed with other uses including timber production.[55]

- State Forests also provide opportunities for recreational activities that are mostly prohibited in parks and reserves. These include trail bike riding, hunting, firewood collection, and horse riding. These have also co-existed with timber production for decades.

- The Otway region is often cited as an example of lucrative forest-based eco-tourism. In particular, the Otway Fly tree-top walk development is lauded for bringing economic activity and employment to a region that was already attracting 6 million domestic and international tourists in 2002.[56]

- The Otway Fly is located on private land and has been successful whist a substantial timber industry (both plantation and native forest–based) has operated around it. It clearly demonstrates that successful eco-tourism is not reliant on creating National Parks and closing timber industries.

- The success of the Otway Fly also demonstrates the importance of state-of-the-art facilities if forest-based eco- tourism is to optimise economic outcomes. This has been long realised in Tasmania where state-of-the-art eco-lodge accommodation has been integral to the success of National Park tourism at Cradle Mountain and Freycinyet; and two successful tree-top walks have been developed in State

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[54] *Socio-economics of the forest and forest products industry in Victoria*, by Cameron Consulting for the Victorian Association of Forest Industries (October 2005).

[55] *Victoria's State of the Forests Report, 2003* (Chapter 6) Department of Sustainability & Environment. Can be viewed at www.dse.vic.gov.au/forests/

[56] Visitor Statistics for the Geelong-Otway Tourism Region (up to and including year ending 2002). Available at www.geelongotway.org/information

Forests at Tahune and Dismal Swamp. Indeed, Tasmania is a tremendous example of how world class eco-tourism and timber industries can successfully co-exist.

- Conversely, there continues to be little enthusiasm for investment in state-of-the-art eco-tourism developments on public land in Victoria (eg. Wilson's Promontory – the failed Tidal River lodge proposal).

- In the absence of top class state-of-the-art attractions, forests alone do not attract substantial tourism dollars. Visitor statistics for 2002 show that just 4% of visitors to the Otway Ranges visited a national park rainforest or bushwalked. This was despite the region having an extensive park and reserve network with many easily accessible walking tracks and picnic facilities that have co-existed with other uses, including timber production, for 25 - 30 years. [57]

- Unless complemented by high class, state-of-the-art tourism facilities, it is very optimistic to expect remote 'old growth' forests in far away East Gippsland to generate substantial economic activity from a few walking tracks seasonally used by a hardy band of elite, largely self-contained bushwalkers.

4.5 The moral imperative – providing a good example to developing countries

- In a world of increasing population and consumption levels, a balance between conserving forests for their environmental values must be struck against the need to continue to produce wood for human use.

- This is far easier for developed countries such as Australia that have stable political systems, an absence of corruption, and technological advantages that enable multi-disciplinary land use planning and effective government regulation.

- Indeed, developing countries struggling to control rampant forest exploitation with its attendant environmental degradation, view Australia as an aspirational model of how to sustainably produce timber within strictly enforced systems of environmental protection.

- In Victoria, the balance between forest conservation and wood production is approximately 90:10 in terms of forest area. With so much forest reserved, there is nothing to warrant ceasing to sustainably produce timber from the available portion of our forests. On the contrary, on-going wood production has substantial environmental and social benefits.

- Although some in the community find it unpalatable, continuing to produce timber from our own hardwood forests is morally right and an important part of setting a positive example for developing countries battling against massive environmental problems.

[57] Visitor Statistics for the Geelong-Otway Tourism Region (up to and including year ending 2002). Available at www.geelongotway.org/information