

The value in Victoria's Central Highlands

Why is the research needed?

The Victorian Central Highlands is a diverse region with towns, agricultural land, forests and waterways. It contains the major catchment areas for water supply to Melbourne and surrounding regions. Other land use activities include agriculture, tourism and timber production.

The use of forest land for native timber production falls under the Central Highlands Regional Forest Agreement due for renegotiation in 2018. The Regional Forest Agreement is a 20 year agreement made

between the Victorian Government and Commonwealth Government that outlines their obligations and commitments for forest management.

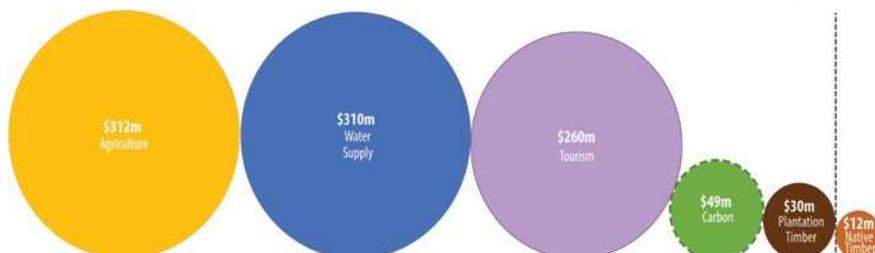
There are strong and conflicting attitudes among stakeholders and the community towards the logging of native timber. Stakeholders in the native timber industry have called for an expansion and certainty of wood supply allocated for native timber harvesting. In contrast, the environmental and tourism sections

have called for an expansion of the national park network, proposed as the Great Forest Reserve System.

Managing the various land use activities within the region is complex due to conflicting land use activities. Not all land uses supported by the community are mutually compatible, and the Victorian Government therefore needs to make informed evidence-based decisions by evaluating the benefits and trade-offs of different land uses.

Ecosystem accounting as a tool for decision-makers

Economic contributions of key regional industries in the Central Highlands



Economic contribution (Industry Value Added) to the Victorian economy from key economic activities in Victoria's Central Highlands (2013-14). The economic contribution of agriculture, water supply, tourism, carbon sequestration and plantation timber production substantially outweighs that of native timber production. Carbon sequestration is an estimate of potential value as there is no current market in Australia.

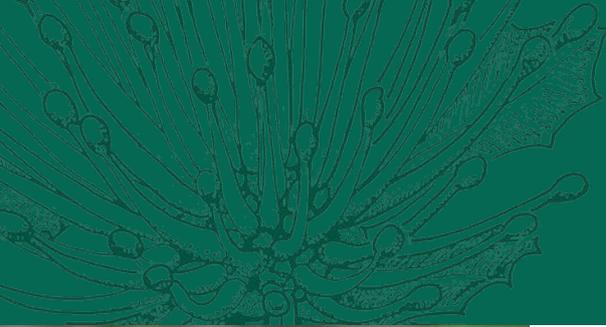
Ecosystem Accounting incorporates both economic and environmental data to compare various land use activities and the trade-offs between different activities. It is a powerful tool that decision makers can use to guide evidence based decisions about land management policies. The economic values presented here were calculated

using the System of Environmental Economic Accounting (SEEA), an internationally recognised statistical standard that is used in more than 50 countries.

The environmental-economic interactions were evaluated at three levels:

1. Values of ecosystem services, both those wholly or partly within the SNA, as well as those not currently included in the SNA;
2. Values of economic uses of ecosystem services by industries as their contribution to industry value added (IVA). The sum of all IVA in an economy equals Gross Domestic Profit (GDP).
3. Potential gains and losses in IVA and ecosystem services involved with impacts and trade-offs between land uses.

Transitioning away from harvesting native forests would contribute net economic, social and environmental benefits to the Central Highlands



Economic contribution of industries such as tourism, water and carbon far exceeds that of native timber

Contributions of these productive activities to the regional economy have been compared using the UN's System of Environmental-Economic Accounting. This system expands traditional accounting methods to include the contribution of natural resources and ecosystem assets and services to the economy. Valuation was assessed in terms of, (1) the benefits of the economic activity of supply of goods and services using the metric of Industry Value Added, the price of exchange within the economy, and (2) the contributions of ecosystem services to those benefits, using a range of metrics including unit resource rent, replacement cost, stumpage and market-based payment systems.

Biodiversity value at risk

The region's native forests are home to 38 threatened species, including Victoria's animal emblem the critically endangered Leadbeater's Possum (*Gymnobelideus leadbeateri*). These tree-dwelling marsupials rely on hollow-bearing trees in montane ash forests for den sites. Mountain Ash (*Eucalyptus regnans*), begin forming cavities after 120 years. Forest harvested on less than 120 year cycles results in no new hollow-bearing trees for arboreal mammals.

The key threatening process for arboreal marsupials is the accelerated loss of existing hollow-bearing trees and the impaired recruitment of new cohorts of these trees because of logging and wildfire. Since 1939, the area logged is 115,421 ha and the area burnt by wildfire is 238,761 ha.

Monitoring over the past 28 years has shown that 47% of the total number of hollow bearing trees have been lost across the monitoring sites.

Regrowth forests post-logging lose more than half of the retained tree large trees within a few decades. Loss of these hollow-bearing trees in regrowth forest was four times the rate in old growth forest. Old growth forests support significantly greater numbers of animals and species than regrowth forests.

The number of listed threatened species has increased from 28 species in 2000 to 38 species in 2015. Species in the region have a clear value as evidenced by the efforts made to conserve many of them and the tourist visitor numbers to the region.

Employment in native forestry, plantation and tourism from Central Highlands Forests

The number of people employed in plantation timber production across Victoria is significantly higher than the number employed in native timber production. Managing the forest, harvesting, haulage and primary processing of plantation timber in Victoria in 2012 employed three times as many people (3300) as that for native forest timber (1100). See "Employment in Industries graph".

Figures from VicForests suggest that only 1 in 5 of those involved in managing, harvesting and haulage for native forest timber are permanent employees. The rest are contractors, many of whom are, or could be, employed in other industries.

Almost one third of forestry employees are in growing and managing roles. These would be retained if native forests were reserved for parks, tourism, water and carbon storage.

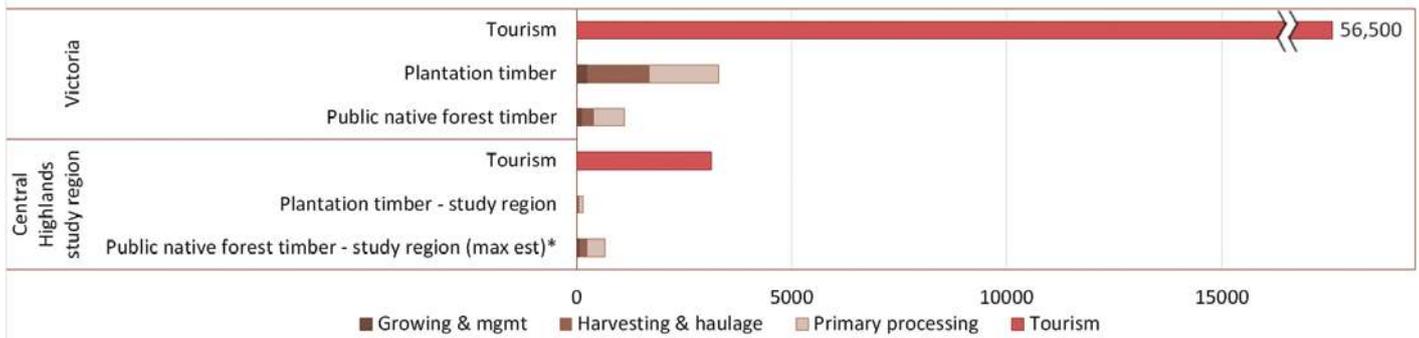
With respect to forests in the Central Highlands study region, 430-660* people were employed in managing the forest, harvesting, haulage and primary processing of native forest timber. Of these, 45-75* were employed specifically in managing forests.

Approximately 3300 people were employed in tourism (2012-13) in the Central Highlands study region, and this has been increasing by 100-200 people per year. In 2013-2014, the tourism industry accounted for 3,500 jobs, and provided an industry value added value of \$260 m.

**Note: Values for Central Highlands study region calculated as proportion of total native forests in Victoria scaled by area (min) & volume (max).*

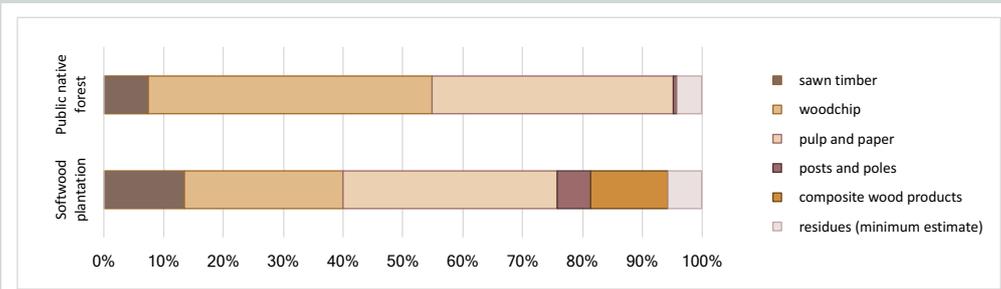
Employment in native forestry, plantation and tourism from Central Highlands Forests (Related Figures)

Employment in industries – Central Highlands and Victoria



Comparison of employment figures across tourism, native timber and plantation timber for all of Victoria and Central Highlands study region.

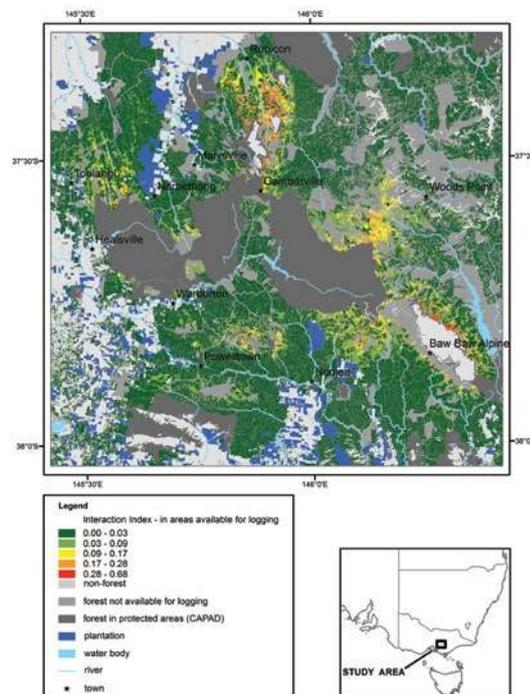
Uses of Forest Timber Victoria



Proportion of harvested volume of wood used for sawlogs, woodchip, pulp and other purposes in native and plantation forestry across Victoria.

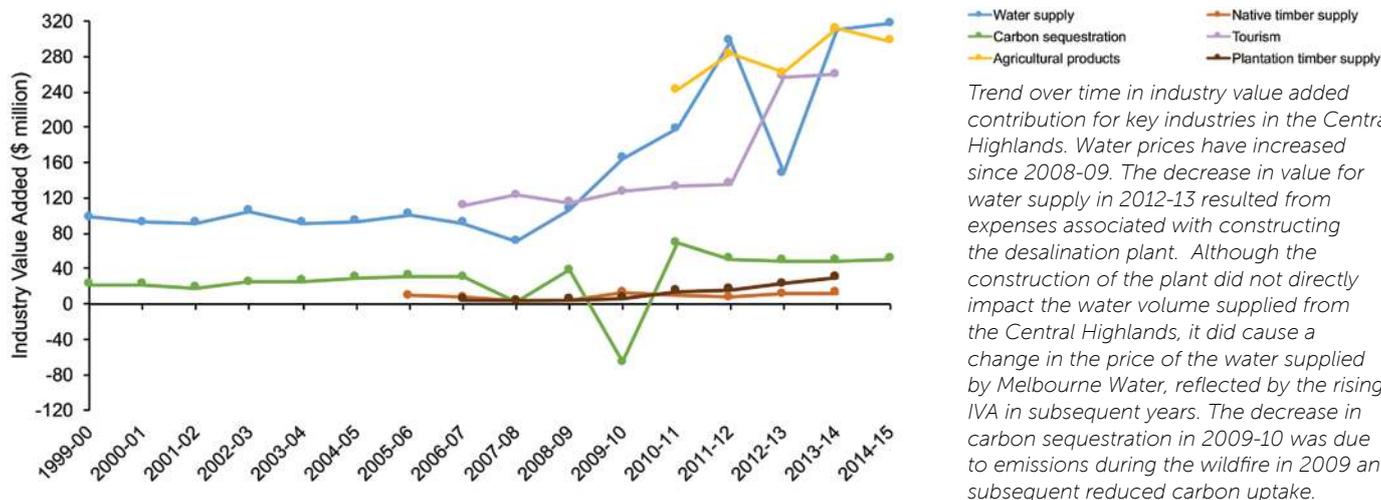
More than 87% of native forest timber harvested across Victoria is used for woodchip, pulp and paper. Only 7.5% is used for sawlogs. Alternatives to wood products from native timber exist in the form of recycled paper and plantation timber. This could be an alternative source of economic output that would allow a reduction in native timber supply from the Central Highlands.

Map of 'hotspots'



Spatial distribution of the value of the combined ecosystem services of water, carbon and native timber in the study region, with a combined interaction index. The interaction index of the highest combined values of these ecosystem services, or 'hotspots' is shown in red, orange and yellow. These 'hotspots' indicate areas where the maximum provisioning for native timber conflicts with maximising services of water provisioning and carbon storage in the areas of forest that are available for harvesting.

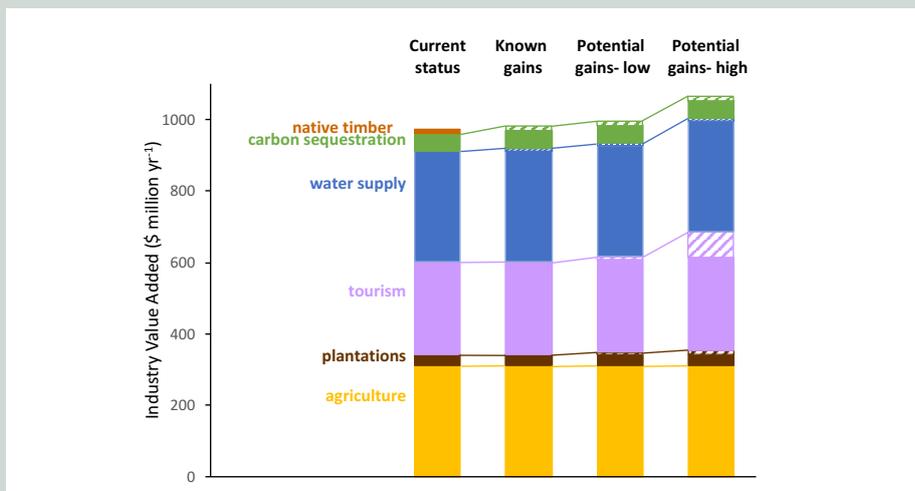
Industry Value Added contribution for economic activities in Vic Central Highlands



Trend over time in industry value added contribution for key industries in the Central Highlands. Water prices have increased since 2008-09. The decrease in value for water supply in 2012-13 resulted from expenses associated with constructing the desalination plant. Although the construction of the plant did not directly impact the water volume supplied from the Central Highlands, it did cause a change in the price of the water supplied by Melbourne Water, reflected by the rising IVA in subsequent years. The decrease in carbon sequestration in 2009-10 was due to emissions during the wildfire in 2009 and subsequent reduced carbon uptake.

Potential gains in IVA with cessation of native timber harvesting

Cessation of harvesting native timber would contribute net economic, social and environmental benefits to the Central Highlands. Known gains: calculated gains in carbon sequestration and water supply. Potential gains: assumed gains in plantation timber production to substitute for native timber and estimated increase in tourism.



References

Ecosystem Accounting Work is drawn from Heather Keith, Michael Vardon, John Stein, Janet Stein and David Lindenmayer, *Experimental Ecosystem Accounts for the Central Highlands of Victoria - Final Report*.

Forest industry employment data is from Schirmer et al. 2013. *Socio-economic characteristics of Victoria's forestry industries, 2009-2012*.

Tourism employment data is from Tourism Research Australia 2015. *State Tourism Satellite Accounts* <http://www.tra.gov.au/research/State-tourism-satellite-accounts-2013-14.html>

Further Information

For more information about this TSR Hub research, contact Prof. David Lindenmayer - david.lindenmayer@anu.edu.au or visit our website at <http://www.nespthreatenedspecies.edu.au/>