Forestry Department
Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT 2010

COUNTRY REPORT

AUSTRALIA

FRA2010/012
Rome, 2010

The Forest Resources Assessment Programme

Sustainably managed forests have multiple environmental and socio-economic functions important at the global, national and local scales, and play a vital part in sustainable development. Reliable and up-to-date information on the state of forest resources - not only on area and area change, but also on such variables as growing stock, wood and non-wood products, carbon, protected areas, use of forests for recreation and other services, biological diversity and forests' contribution to national economies - is crucial to support decision-making for policies and programmes in forestry and sustainable development at all levels.

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Forest Resources Assessment Programme. This country report forms part of the Global Forest Resources Assessment 2010 (FRA 2010).

The reporting framework for FRA 2010 is based on the thematic elements of sustainable forest management acknowledged in intergovernmental forest-related fora and includes variables related to the extent, condition, uses and values of forest resources, as well as the policy, legal and institutional framework related to forests. More information on the FRA 2010 process and the results - including all the country reports - is available on the FRA Web site (www.fao.org/forestry/fra).

The Global Forest Resources Assessment process is coordinated by the Forestry Department at FAO headquarters in Rome. The contact person for matters related to FRA 2010 is:

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Introduction

- This document is Australia's National Country report to the UNFAO Global Forest Resource Assessment 2010.
- This report was prepared using information published in Australia's State of the Forests Report (SOFR) 2008 (MIG 2008), 2003 (NFI 2003) and 1998 (NFI 1998), with additional information sourced from other published documents.
- Responsibility for forest management in Australia resides with the 6 state and territory governments. Forest mapping and monitoring information is provided by the states and territories to the National Forest Inventory and reported in Australia's five-yearly State of the Forests Reports (1998, 2003, 2008). The ability by states and territories to estimate forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods. This largely explains the revision of estimated total forest area from 164 million hectares in 2003 to 149 million hectares reported in Australia's State of the Forests Report 2008; little of the change is due to real forest loss.
- Australia, through the Australian Government Department of Climate Change (DCC), has consistent land cover change data from 1972-2007 for carbon reporting purposes. Published forest cover change figures for 1990-2007 are provided in Australia's National Greenhouse Accounts National Inventory Report 2007, released in May 2009, and referred to in this submission as ANGA 2009.
- To address the mapping inconsistencies between 1998, 2003 and 2008, a set of derived forest extent figures are reported here for 1990, 2000 and 2005. Referred to as *Australia's derived FAO forest extent,* the figures have been calculated using DCC forest cover change figures for the years 1990 to 2007 and the 2008 forest extent (native forest — Australia's State of the Forest Report 2008; plantation extent — Australia's National Plantation Inventory 2008). The tenure, forest type and structure proportions for the 2000 and 2005 figures are from the 1998 and 2003 SOFRs.
- *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.
- *Australia's derived FAO forest extent 1997* is reported for 2000; *Australia's derived FAO forest extent 2002* is reported for 2005; and Australia's National Forest Inventory 2007 forest extent baseline (Australia's SOFR 2008 (MIG 2008)) for native forest; NPI 2008 for plantation forest) is reported for 2010 to provide the five-year time period required by FAO. *Australia's FAO forest extent 1990* has been provided to meet the FAO reporting requirement based on the DCC forest cover change figures 1990 to 2007. Figures prior to 1990 were not published in the ANGA 2009.
- Australia's extent figures for 'Other Wooded Land' are based on publicly available information from Australia's National Vegetation Information System (NVIS). For further information, please see: http://www.environment.gov.au/metadataexplorer/full_metadata.jsp?docId=%7B6E1628FC-DFB6-4FCB-80A4-31D21E676A39%7D&loggedIn=false

1 Table T1 – Extent of Forest and Other wooded land

1.1 FRA 2010 Categories and definitions

Category	Definition
Forest	Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 per cent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.
Other wooded land	Land not classified as "Forest", spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 per cent, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 per cent. It does not include land that is predominantly under agricultural or urban land use.
Other land	All land that is not classified as "Forest" or "Other wooded land".
Other land with tree cover (Subordinated to "Other land")	Land classified as "Other land", spanning more than 0.5 hectares with a canopy cover of more than 10 per cent of trees able to reach a height of 5 meters at maturity.
Inland water bodies	Inland water bodies generally include major rivers, lakes and water reservoirs.

1.2 National data

1.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
Gavran & Parsons (2009). *National Plantation Inventory 2009*. Bureau of Rural Sciences, Canberra.	H	Plantation extent, ownership, species composition, annual planting rate by State	2009	This report provides an annual update on Australia's plantation estate based on information provided by growers and regional representatives in tabular form (i.e. numbers but no maps or spatial data). www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > National Plantation Inventory
Davidson J., Davey S., Singh S., Parsons M., Stokes B., Gerrand A. (2008). *The Changing Face of Australia's Forests,* Bureau of Rural Sciences, Canberra.	H	Forest Area, Forest Type	2008	This report summarises the major changes in forest use and management since the National Forestry Policy Statement was agreed in 1992. http://adl.brs.gov.au/forestsaustralia or http://www.affashop.gov.au/product.asp?prodid=13892

Department of the Environment and Water Resources (2007), Australia's Native Vegetation: A summary of Australia's Major Vegetation Groups, 2007(including CD). Australian Government, Canberra, ACT	H	Other Wooded Lands	2007	This booklet has been produced for natural resource managers, researchers and educators. The information presented here is drawn from the National Vegetation Information System (NVIS), which is an information partnership between Australian governments. A CD inside the back cover provides detailed information for researchers and users of Geographic Information Systems (GIS).
Parsons, Gavran & Davidson (2006). *Australia's Plantations*, Bureau of Rural Sciences, Canberra.	H	Plantation extent, ownership, species, age class, spatial distribution by States and 15 regions with maps.	2006	This report is the definitive national assessment of Australia's plantations up to 2006 based on spatial data and survey of all major plantation growers and as much plantation data as could be assembled.
Department of Climate Change (2009) *National Inventory Report 2007 – Volume 2*. The Australian Government Submission to the UN Framework Convention on Climate Change. May 2009 See http://www.climatechange.gov.au/inventory	H	Change in area of forest over time from 1990 to 2007	1990 – 2007	The Department of Climate Change's National Carbon Accounting System (NCAS) provides a picture of land cover change for the purposes of greenhouse gas accounting using a nationally applied remote sensing approach over Australia based on a consistent time series of woody vegetation extent integrated with biomass modelling. http://www.climatechange.gov.au/ncas The system is used to report land use change, but maps woody vegetation extent to do this. This mapping has been completed for 16 time periods between 1972 and 2007 using methods that ensure time series consistency. The mapping of woody vegetation extent is part of the ongoing NCAS program and will be updated annually. See comments for Table 1 under section 1.6.
National Forest Inventory (2003). *Australia's State of the Forests Report 2003.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992-2002	This report was the most comprehensive report and national assessment of Australia's forests at the time and was the principal source of information provided for FRA 2005. SOFR 2003 was compiled from numerous spatial data sets between 1992 and 2002 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. http://adl.brs.gov.au/forestsaustralia
Hnatiuk, R. P. Tickle, M.S. Wood and C. Howell. 2003. *Defining Australian forests*. Australian Forestry 66:176-186.	H	Forest area	2003	Paper that provides good discussion of issues relating to the national compilation of Australia's forest related statistics.

National Forest Inventory (1998). *Australia's State of the Forests Report 1998*. Bureau of Rural Sciences, Canberra.	H	Forest area, forest type	1992-1998	Compiled from numerous spatial data sets between 1992 and 1998 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > State of the Forests Report > State of the Forests Report 1998
Wood, M. S., Stephens, N.C. Allison, B.K. Howell, C.I. (2001). *Plantations of Australia 2001*. National Plantation Inventory, Bureau of Rural Sciences, Canberra (172pp.).	H	Plantation extent, ownership, species, age class, spatial distribution by States and 15 regions with maps	2000	This report was the definitive national assessment of Australia's plantations up to 2000 based on spatial data and survey of all major plantation growers and as much farm forestry plantation data as could be assembled. www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > National Plantation Inventory

1.2.2 Classification and definitions

Australia's National classes	**Definition**
Forest	An area, incorporating all living and non-living components, that is dominated by trees having usually a single stem and a mature or potentially mature stand height exceeding two metres and with existing or potential crown cover of overstorey strata about equal to or greater than 20 per cent. This definition includes Australia's diverse native forests and plantations, regardless of age. It is also sufficiently broad to encompass areas of trees that are sometimes described as woodlands. *[Note that "forest" as defined here includes the sub-categories of woodland forest, open fores and closed forest described below].*
Woodland forest	Sparse forest in which the tree crown cover ranges from greater than 20 to 50 per cent of the land area when viewed from above
Open forest	Forest in which the tree crown cover ranges from greater than 50 to 80 per cent of the land area when viewed from above
Closed forest	Forest in which the tree crown cover ranges from greater than 80 to 100 per cent of the land area when viewed from above.
Other Land	Land not classified as forest or other wooded land. Includes agricultural land, meadows and pastures, built-on areas, barren land, etc.
Inland Water	Area occupied by major rivers, lakes and reservoirs.
Plantation	This report uses the Australian National Forest Policy Statement definition of a timber plantation, as adopted by the National Plantation Inventory, as: *intensively managed stands of trees of either native or exotic species created by the regular placement of seedlings or seeds.*
Land use change	Land use change is where land that meets the definition of forest is converted to a non-forested condition by direct human action. Commercial forestry activity is excluded, unless post harvest activity involves a change in land use, e.g. to pasture or cropping. Plantations are not included in the land use change accounting framework unless there is interceding change in land use between the original forest condition and planting of the plantation.

1.2.3 Original data

Previously reported estimates of forest area and change in forest cover (in thousands of hectares)

Forest crown cover class	**'90** [1, 2]	**'94**[3]	**'97**[4]	**'99**[5]	**'00**[6]	**'01**[7]	**'02**[8]	**'03**[9]	**'04**[10]	**'05**[11]	**'06**[12]	**'07**[13]	**'08**[14]
Woodland	n.a.		112,032				102,526					99,007	
Open	n.a.		39,174				45,603					44,120	
Closed	n.a.		4,628				4,626					4,270	
Unknown crown cover	n.a.						9,907					0	
Sub-total native forest[15]	n.a.		*155,835*				*162,680*					*147,397*	
Plantation	1,023	1,043	1,176	1,337	1,485	1,569	1,628	1,666	1,716	1,739	1,818	1,903	1,973
Total Forest[16]	**n.a.**		**157,319**				**164,378**					**149,300**	

Notes:

1. Australia's definition of forest in 1990 was commercially rather than ecologically based. It included native forest with existing or potential stand height of 20 metres or more, and cypress pine forest in commercial use regardless of stand height. 1990 forest extent figures are therefore very inconsistent with Australia's more recent forest definition. Therefore a figure for 1990 native forest is not included in this table.
2. Plantation: Australian Bureau of Agriculture and Resource Economics 'Australian Forest Resources 1990 and 1991'.
3. National Plantation Inventory 1997 (this was the first report of Australia's national plantation inventory with areas in 5-year snapshots to end 1994, and subsequent years to 1997).
4. Native forest 1997: State of the Forests Report 1998, Table 2, page 32.
   Plantation 1997: from National Plantation Inventory 2000 and National Plantation Inventory 1997 data
5. National Plantation Inventory 2000 Update: Plantation areas as at end of 1999
6. National Plantation Inventory 2001 Report: Plantation areas as at end of 2000
7. National Plantation Inventory 2002 Update: Plantation areas as at end of 2001
8. Native forest 2002: State of the Forests Report 2003, Table 5, page 37.
   Plantation: National Plantation Inventory 2003 Update: Plantation areas as at end 2002
9. National Plantation Inventory 2004 Update: Plantation areas as at end of 2003
10. National Plantation Inventory 2005 Update: Plantation areas as at end of 2004
11. National Plantation Inventory 2006 Report: Plantation areas as at end of 2005
12. National Plantation Inventory 2007 Report: Plantation areas as at end of 2006
13. National Plantation Inventory, 2008 Report: Plantation areas as at end of 2007
14. National Plantation Inventory 2009 Update: Plantation areas as at end of 2008
15. The reported area of forest in Australia identifies an increase by 7 million hectares between the 1998 and 2003 State of the Forest Reports, and a decrease by 15 million hectares between the 2003 and 2008 State of the Forest Reports. These changes are primarily due to improved mapping in many regions within Australia and do not reflect significant changes in the on-ground area of forests. The figures presented in Table 1 for FRA2005 have been adjusted to present a more realistic trend based on forest cover change data.
16. The total extent of forest reported here for the purposes of FRA differs from the woody vegetation extent derived by the National Carbon Accounting System for carbon accounting purposes.

1.3 Analysis and processing of national data

1.3.1 Calibration

Source	Land Area (1,000 Hectares)	Area of Inland water (1,000 Hectares)	Total Area of Australia (1,000 Hectares)
FAOSTAT	768,230	5,892	774,122

Although FAOSTAT data differ to the land areas officially reported within Australia under other national reporting requirements, including the National Greenhouse Gas Accounts, for the purposes of the FAO FRA Australia's national figures provided in this report have not been calibrated. Reconciliation of FAOSTAT land and water areas is a matter to be followed up directly with FAO outside the FRA process.

Geoscience Australia, which provides the formal figure for Australia's land area, identifies a total land area of 769,202,400 hectares, of which 765,986,100 hectares are mainland and 3,216,300 hectares are islands.

1.3.2 Estimation and forecasting

There are difficulties in projecting forest area or other statistics into the future and adjusting for other dates. Australia's domestic forest reporting timetable is not aligned with that for FRA. For most FRA tables (except Tables 1, 2, 3, and 4 involving forest area which are discussed below), Australia's 1998 State of the Forests Report (NFI 1998) will form the basis for reporting for year 2000 data; the 2003 SOFR (NFI 2003) and 2008 SOFR (MIG, 2008) are the primary sources of information for 2005 data and 2010 data respectively.

For forest extent, the SOFR 2008 data is used as the baseline for native forest extent in 2007 as it is the most up to date information available nationally, agreed to by all states and territories and published through the National Forest Inventory. For consistency, plantation area extent figures for 2007 (National Plantation Inventory, 2008) are used as the baseline plantation figure.

To provide the five-year time period required by FAO, 1997 forest figures are reported in 2000; 2002 forest figures are reported in 2005; and 2007 forest figures are reported in 2010.

The change in Australia's forest extent figures reported in Australia's three State of the Forests Reports (SOFR)) in 1998, 2003 and 2008 of 156.4 million hectares, 164.4 million hectares and 149.2 million hectares respectively – see Table 1.2.3 – largely reflects improvements in forest cover mapping undertaken by State and Territory forest management agencies, rather than actual on-ground forest cover change.

To address the mapping inconsistencies between 1998, 2003 and 2008, a set of derived forest extent figures are reported here for 1990, 2000 and 2005. Referred to as *Australia's derived FAO forest extent,* the figures have been calculated using DCC forest cover change figures for the years 1990 to 2007 and the 2008 forest extent (native forest — Australia's State of the Forest Report 2008; plantation extent — Australia's National Plantation Inventory 2008). The tenure, forest type and structure proportions for the 2000 and 2005 figures are from the 1998 and 2003 SOFRs.

Australia's derived FAO forest extent figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

The ANGA forest cover change (and therefore Australia's FAO forest extent) figures show a net loss of forest from 1990 to 2007. The net loss is comprised of both gains from regrowth and plantation expansion, along with losses from deforestation[1] as well as the impacts of drought and fire.

The figures (see Table 1.3.2) show a net increase in forest cover of almost 1 million hectares for the period 1990 to 2000, however, there has subsequently been a net decline in Australia's forest area. It is understood the most likely reason for the detected decline in forest extent is the extended drought across much of Australia since 2000 which has resulted in a double loss: a decline in forest regrowth along with a decline in tree foliage from water stress (the reduced foliage is detected by satellites as a loss of forest extent). It is unclear at this stage whether the climatic-induced reduction is a temporary or permanent loss of forest. Since 2000 there have been a number of high-intensity mega fires (see Table 46, SOFR 2008 for more information on mega-fires), especially in Australia's open forests – the long term effect on Australia's forest extent as a result of these fires is, as yet, unclear.

According to the ANGA May 2009 (Table 7.2) landclearing has decreased from a high in 1990 of 560,900 hectares to 378,300 hectares in 2006.

Australia's forest extent, as published in Australia's State of the Forests Report 2008, is determined by the National Forest Inventory based on information provided by the states and territories (149,300,000 ha.). The extent of forest identified by DCC used for carbon accounting purposes (106,830,000 ha.) differs from that identified by the states and territories through the National Forest Inventory. Ongoing discussions between DCC, the National Forest Inventory and state and territory forest management agencies are underway to better understand the figures.

Australia's formal position for the purposes of recalculating Australia's FAO forest extent for the FRA 2010, is to apply the absolute ANGA (May 2009) forest cover change figures to Australia's National Forest Inventory 2008 forest extent.

To provide the five-year time period required by FAO, 1997 forest are reported in 2000; 2002 forest are reported in 2005; and 2007 forest figures are reported in 2010. Forest related data prior to 1990, consistent with forest-related data post 1990, are largely unavailable in Australia. As such, the 1990 reporting year has been populated with 1990 data, which leads to an unavoidable inconsistency in FAO's desired 10-year reporting period between 1990 and 2000.

[1] 'Deforestation' is the direct human-induced conversion of forested land to non-forested land

Table 1.3.2 – 'Australia's FAO Forest Extent' estimates calculated on 2008 baseline native and plantation forest extent, with Australian National Greenhouse Accounts (May 2009) change applied (ha)

Recalculated Figures			Supporting figures		
Year	Australia's FAO Forest Estimates (NFI 2008 base & ANGA net change)	Annual Change Rate	National Greenhouse Accounts (May 2009) Forest Loss (to grass & crop)	NGA 2009 Forest Gain (from grass)	NGA 2009 Annual Forest Cover
1990	**154,500,000**	n/a	-560,000	680,000	112,030,000
1991	154,630,000	0.08%	-420,000	550,000	112,160,000
1992	154,930,000	0.19%	-390,000	690,000	112,460,000
1993	154,960,000	0.02%	-390,000	420,000	112,490,000
1994	154,990,000	0.02%	-370,000	400,000	112,520,000
1995	155,020,000	0.02%	-320,000	350,000	112,550,000
1996	154,970,000	-0.03%	-320,000	270,000	112,500,000
1997	**154,920,000**	-0.03%	-310,000	260,000	112,450,000
1998	154,870,000	-0.03%	-330,000	280,000	112,400,000
1999	155,080,000	0.14%	-340,000	550,000	112,610,000
2000	155,290,000	0.14%	-360,000	570,000	112,820,000
2001	154,610,000	-0.44%	-780,000	100,000	112,140,000
2002	**153,920,000**	-0.45%	-770,000	80,000	111,450,000
2003	153,120,000	-0.52%	-890,000	90,000	110,650,000
2004	152,320,000	-0.52%	-880,000	80,000	109,850,000
2005	151,330,000	-0.65%	-1,050,000	60,000	108,860,000
2006	150,400,000	-0.61%	-970,000	40,000	107,930,000
2007	**149,300,000**	-0.73%	-1,150,000	50,000	106,830,000
2008	149,369,535	n/a			

Data Sources:

Department of Climate Change (2009) National Inventory Report 2007 – Volume 2. The Australian Government Submission to the UN Framework Convention on Climate Change. May 2009. See http://www.climatechange.gov.au/inventory

Baseline 2007 Forest extent: Native forest (Australia's SOFR 2008 (MIG 2008)), Plantation forest (NPI 2008)

1.3.3 Reclassification into FRA 2010 categories

The definition of forest used in Australia differs from the FRA 2010 definition in both height and density thresholds. Australian forest is defined by trees with an actual or potential minimum height of 2 metres and minimum crown cover of 20%. Structural classifications above this height threshold are 2-10 m (low), 10-30 m (medium) and >30 m (tall). The 2 m threshold is used to include all mallee vegetation (9.2 M ha of the total area). This group of *Eucalyptus* species have a tree form and generally range between 2 and 10 m in height, depending on site conditions. They occur in relatively remote areas and are mapped using remote sensing. It is not possible with this methodology to easily detect or report on vegetation above or below a 5 m threshold. Thus, it is not possible to differentiate using the 5 metre threshold as requested for FRA2010. Most other forest tree species in Australia form forests greater than 5 m tall.

Similarly, much of Australia's forest area is in lower crown cover density classes (20-50%) in remote areas and is mapped using remote sensing. It is not generally possible using LANDSAT imagery to distinguish crown cover classes below 20%. See the 2008 State of the Forests Report for detailed explanation.

An analysis using information compiled in Australia's National Vegetation Information System (NVIS) has resulted in an interim estimate of OWL in Australia. The analysis uses the best spatial information available at the time of writing, with the resulting area considered to be a substantial improvement over the Carnahan analysis reported for OWL in the FRA 2000. However, while the NVIS data are significantly more representative, they are still considered an overestimate of Australia's extent of OWL. It is now recognised that the Carnahan data reported in FRA 2000 was a considerable overestimate; to ensure erroneous conclusions on the trend of OWL are not made the Carnahan data have not been included into the FRA2010.

New methods developed by the CSIRO are currently being applied by DCC to Landsat TM and ETM data (that is, since 1988) that will allow for the mapping of sparse woody vegetation down to a crown cover of around 8%. This mapping will allow for fine scale mapping of 'other wooded land' and analysis of change through time. These products will be completed within the next 12 months and will be available for input into the next FRA report. This is expected to substantially improve Australia's ability to report trend in OWL in future FRA reports.

	FRA classes				
Australian National Classes	**FRA Forest**	**FRA Other wooded land**[1]	**FRA Other land**	**Inland water**	**Total**
Plantation	100%				100%
Forest	100%				100%
Other land			100%		100%
Other Wooded Land[2]		100%			
Inland Water				100%	100%

Notes:

1. Other Wooded Land is not separately identified in the Australian forest classification and Forest Fallow/Shrubs is not known.
2. Figures submitted by Australia for FAO's Other Wooded Land category are based on published information and calculated solely for FRA reporting purposes. These figures are likely to differ from figures cited by Australia for other reporting purposes.

1.4 Data for Table T1

FRA 2010 categories	**Area (1000 hectares)**			
	1990	**2000**	**2005**	**2010**
Forest[1]	154,500	154,920[2]	153,920[3]	149,300[4]
Other wooded land	n.a.	n.a	n.a.	135,367[5]
Other land	613,730	613,310	614,310	483,561
...of which with tree cover	n.a.	n.a.	n.a.	n.a.
Inland water bodies	5,892	5,892	5,892	5,892
TOTAL	**774,122**	**774,122**	**774,122**	**774,122**

Notes: Figures may not tally exactly due to rounding

Australia's derived FAO forest extent figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

1. In response to a request by FAO in August 2009, to address the mapping inconsistencies between 1998, 2003 and 2008, a set of derived forest extent figures are reported here for 1990, 2000 and 2005. Referred to as *Australia's derived FAO forest extent,* the figures have been calculated using the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program for the years 1990 to 2007, and the 2008 National Forest Inventory forest extent (native forest - Australia's State of the Forest Report 2008; plantation extent - Australia's National Plantation Inventory 2008). The tenure, forest type and structure proportions for the 2000 and 2005 figures are from Australia's 1998 and 2003 State of the Forest Reports. 1990 forest area by tenure is only known for plantations, as per Table 2.2.3. Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods especially in Australia's woodland forests (20-50% crown cover). To provide the five-year time period required by FAO, 1997 forest are reported in 2000; 2002 forest are reported in 2005; and 2007 forest figures are reported in 2010. Data prior to 1990 were unavailable: as such 1990 data has been reported for this time period.
2. *Australia's derived FAO forest extent, 1997*
3. *Australia's derived FAO forest extent, 2002*
4. Australia's National Forest Inventory forest extent: Native forest (SOFR 2008), Plantation forest (NPI, 2008)
5. Figures submitted by Australia for FAO's Other Wooded Land category are based on published NVIS information and calculated solely for FRA reporting purposes. These figures are considered to be overestimate and are likely to differ from figures cited by Australia for other reporting purposes.

1.5 Comments to Table T1

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Forest	A land area, incorporating all living and non-living components, dominated by trees usually having a single stem and a mature or potentially mature stand height exceeding 2 metres, and with existing or potential crown cover of overstorey strata about equal to or greater than 20%. This definition includes native forests and plantations and areas of trees that are sometimes described as woodlands.	Australia's FAO forest extent figures were derived by applying the Australian National Greenhouse Account (May 2009) forest cover change figures to a 2007 National Forest Inventory forest extent base (SOFR 2008 native forest; NPI 2008 plantation figures). To provide the five-year time period required by FAO, 1997 derived forest extent is reported in 2000; 2002 derived forest extent are reported in 2005; and 2007 derived forest extent figures are reported in 2010. Data prior to 1990 were unavailable: as such 1990 data has been reported for this time period. Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods especially in Australia's woodland forests (20-50% crown cover).
Other wooded land	Other Wooded Land is not separately identified in the Australian forest classification and Forest Fallow/Shrubs is not known. An analysis using information compiled in the National Vegetation Information System (NVIS) has resulted in an interim estimate of OWL in Australia. OWL NVIS classification – "Tall, Medium and Low Trees (>30, 10-30 and <10m respectively) and Tall Shrubs (>2m). The Tall Shrubs category excludes eucalyptus as they were included under 'forest' as Mallee". The full table showing all NVIS L3 and L6 classifications included as OWL can be supplied if required.	The analysis uses the best spatial information available at the time of writing, and the resulting area is considered to be a substantial improvement over the very coarse Carnahan analysis used in the preparation of the FRA 2000. However, while the data submitted for FRA2010 are significantly more representative, they are still considered an overestimate of the extent of OWL.

Other land	Figures for Other Wooded Land for 1990, 2000 and 2005 are included in the 'Other Land' tally.	
Other land with tree cover		
Inland water bodies		

Other general comments to the table
The Australian Department of Climate Change (DCC, 2008) has reported on change in woody vegetation area for the purposes of greenhouse gas accounting using a nationally applied remote sensing approach derived from analysis of LANDSAT imagery for 16 time periods between 1972 and 2007. The methodologies used for deriving these estimates are significantly different from those used for the National Forest Inventory which have been derived from a wide range of different sources including aerial photography. However, the DCC figures are considered the best available estimates of forest cover change over time and have been combined with the NFI estimate of native and plantation forest extent in 2008 to present the best estimate of the change in forest extent between 1990 and 2008. As noted in the 2008 SOFR, the DCC revised areas of clearing differ considerably from previously published figures. A revised set of historic forest figures is being developed but is not available for inclusion in this response. DCC also produces data on woody vegetation extent for the purposes of carbon reporting National Plantation Inventory estimates have been used to report on plantation forest extent. Australia does not implement a nationally consistent forest monitoring, inventory or mapping program other than the DCC Landsat program used for carbon reporting purposes. Data in the National Forest Inventory are compiled from various State & Territory forest and vegetation mapping activities.

Expected year for completion of ongoing/planned national forest inventory and/or RS survey / mapping	
Field inventory	n.a.
Remote sensing survey / mapping	National RS mapping for woody vegetation extent for the period 1972-2001 was first completed in 2002 under the DCC Landsat program and is part of an ongoing update program (latest data available for 2007).

2 Table T2 – Forest ownership and management rights

2.1 FRA 2010 Categories and definitions

Category	Definition
Public ownership	Forest owned by the State; or administrative units of the public administration; or by institutions or corporations owned by the public administration.
Private ownership	Forest owned by individuals, families, communities, private co-operatives, corporations and other business entities, private religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.
Individuals *(sub-category of Private ownership)*	Forest owned by individuals and families.
Private business entities and institutions *(sub-category of Private ownership)*	Forest owned by private corporations, co-operatives, companies and other business entities, as well as private non-profit organizations such as NGOs, nature conservation associations, and private religious and educational institutions, etc.
Local communities *(sub-category of Private ownership)*	Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area. The community members are co-owners that share exclusive rights and duties, and benefits contribute to the community development.
Indigenous / tribal communities *(sub-category of Private ownership)*	Forest owned by communities of indigenous or tribal people.
Other types of ownership	Other kind of ownership arrangements not covered by the categories above. Also includes areas where ownership is unclear or disputed.
Categories related to the holder of management rights of public forest resources	
Public Administration	The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.
Individuals/households	Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.
Private institutions	Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities, private co-operatives, private non-profit institutions and associations, etc., through long-term leases or management agreements.
Communities	Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.
Other form of management rights	Forests for which the transfer of management rights does not belong to any of the categories mentioned above.

2.2 National data

2.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest; • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
Gavran & Parsons (2009). *National Plantation Inventory 2009.* Bureau of Rural Sciences, Canberra.	H	Plantation extent, ownership, species composition, annual planting rate by State	2009	This report is provides and annual update on Australia's plantation estate based on information provided by growers and regional representatives in tabular form (i.e. numbers but no maps or spatial data). www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > National Plantation Inventory
Davidson J., Davey S., Singh S., Parsons M., Stokes B., Gerrand A. (2008). *The Changing Face of Australia's Forests,* Bureau of Rural Sciences, Canberra.	H	Forest Area, Forest Type	2008	This report summarises the major changes in forest use and management since the National Forestry Policy Statement was agreed in 1992. http://adl.brs.gov.au/forestsaustralia or http://www.affashop.gov.au/product.asp?prodid=13892
National Forest Inventory (2005). *National Plantation Inventory 2005 Update.* M. Parsons and M. Gavran. Bureau of Rural Sciences, Canberra (8pp.).	H	Plantation extent, ownership, species composition, annual planting rate by State	2003	This report is provides and annual update on Australia's plantation estate based on information provided by growers and regional representatives in tabular form (i.e. numbers but no maps or spatial data). www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > National Plantation Inventory
National Forest Inventory (2003). *Australia's State of the Forests Report 2003.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992-2002	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2003 was compiled from numerous spatial data sets between 1992 and 2002 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > State

				of the Forests Report
National Forest Inventory (1998). *Australia's State of the Forests Report 1998.* Bureau of Rural Sciences, Canberra.	H	Forest area, forest type	1992-1998	Compiled from numerous spatial data sets between 1992 and 1998 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > State of the Forests Report > State of the Forests Report 1998

2.2.2 Classification and definitions

National class	Definitions for Australia's National Forest Inventory tenure categories
Multiple-use forest	Publicly owned state forest, timber reserves and other forest areas on which a range of forest values are managed, including timber harvesting, water supply, conservation of biodiversity, recreation and environmental protection. Such forests are managed by state and territory agencies in accordance with relevant Acts and regulations.
Nature conservation reserves	Crown land that is formally reserved for environmental, conservation and recreational purposes. Nature conservation reserves include national parks, nature reserves, state and territory recreation and conservation areas, and formal reserves in state forests and on Crown lands reserved to protect water-supply catchments. They do not include informal reserves and those pending gazettal. The harvesting of wood and non-wood forest products is generally not permitted.
Private land	Forest on land held under freehold title and under private ownership; includes land held under freehold title with special conditions attached for designated Indigenous communities.
Leasehold land	Forest on Crown land held under leasehold title and generally regarded as privately managed: includes land held under leasehold title with special conditions attached for designated Indigenous communities.
Other crown land	Crown land reserved for a variety of purposes, including utilities, scientific research, education, stock routes, mining, use by the defence forces, and use by Indigenous communities.
Unresolved tenure	Areas identified where tenure is unknown or for which there are no data.

Source: Australia's State of the Forest Report, 2008

2.2.3 Original data

Australian National Classes[1]	**1997 forest area**	***'97 %***	**2002 forest area**	***'02 %***	**2007 forest area**	***'07 %***
Multiple Use Forest	13,351	*9*	11,395	*7*	9,410	*6*
Nature Conservation Reserve	17,580	*11*	21,491	*13*	22,371	*15*
Other Crown Land	15,597	*10*	13,143	*8*	10,862	*7*
Private	42,018	*27*	38,928	*24*	38,099	*26*
Leasehold	66,103	*42*	75,596	*46*	65,132	*44*
Unresolved Tenure	1,186	*1*	2,127	*1*	1,524	*1*
Sub-total native forest	***155,835[1]***	*100*	***162,680[2]***	*100*	***147,398[3]***	*100*
Public	720		625		650	
Private	456		906		1,151	
Joint ownership	0		95		98	
Unknown	0		2		4	
Plantation	***1,176[4]***		***1,628[5]***		***1,903[6]***	
Total	**157,011**		**164,308**		**149,300**	

Notes: Totals may not tally exactly due to rounding
See Comments to National reporting table T1 and T3 for more detailed explanation
Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods in Australia's woodland forests (20-50% crown cover). This largely explains the revision of estimated total forest area from 2000 to 2005 to 2010; little of the change is due to real forest loss.

1. 1997 National Forest Inventory forest extent– Native Forest: SOFR 1998.
2. 2002 National Forest Inventory forest extent– Native Forest: SOFR 2003.
3. 2007 National Forest Inventory forest extent – Native Forest: SOFR 2008
4. 1997 plantation extent: Based on National Plantation Inventory 1997 and National Plantation Inventory 2000 data.
5. 2002 plantation extent: National Plantation Inventory 2003.
6. 2007 plantation extent: National Plantation Inventory 2008

2.3 Analysis and processing of national data

2.3.1 Calibration

No calibration is undertaken (see Table 1).

2.3.2 Estimation and forecasting

For year 2010 native forests, the 2008 State of the Forests Report areas have been used (data circa 2007). For plantations the National Plantation Inventory 2007 data from the Plantations of Australia update (Gavran et al, 2008) are used.

In response to a request by FAO in August 2009, to address the mapping inconsistencies between 1998, 2003 and 2008, a set of derived forest extent figures are reported here for 1990, 2000 and 2005. Referred to as *Australia's derived FAO forest extent,* the figures have been calculated using the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program for the years 1990 to 2007, and the 2008 National Forest Inventory forest extent (native forest - Australia's State of the Forest Report 2008; plantation extent - Australia's National Plantation Inventory 2008). The tenure, forest type and structure proportions for the 2000 and 2005 figures are from Australia's 1998 and 2003 State of the Forest Reports. 1990 forest area by tenure is only known for plantations, as per Table 2.2.3.

To provide the five-year time period required by FAO, 1997 forest are reported in 2000; 2002 forest are reported in 2005; and 2007 forest figures are reported in 2010.

For forest extent, the SOFR 2008 data is used as the baseline for native forest extent in 2007 as it is the most up to date information available nationally, agreed to by all states and territories and published through the National Forest Inventory. For consistency, plantation area extent figures for 2007 (National Plantation Inventory, 2008) are used as the baseline plantation figure.

2.3.3 Reclassification into FRA 2010 categories

	FRA Classes			
Australian National Classes	**Private Ownership**	**Public Ownership**	**Other ownership**	**Total**
Leasehold		100%		100%
Private	100%			100%
Multiple Use Forest		100%		100%
Nature Conservation Reserve		100%		100%
Other Crown Land		100%		100%
Unresolved Tenure			100%	100%

2.4 Data for Table T2

Table 2a - Forest ownership

FRA 2010 Categories	**Forest area (1000 hectares)**			
	1990	**2000[2]**	**2005[3]**	**2010[4]**
Public ownership	n.a.	111,840	114,483	108,425
Private ownership	n.a.	41,910	37,348	39,250
...of which owned by individuals	n.a.	n.a.	n.a.	n.a.
...of which owned by private business entities and institutions	n.a.	n.a.	n.a.	n.a.
...of which owned by local communities	n.a.	n.a.	n.a.	n.a.
...of which owned by indigenous/tribal communities	n.a.	n.a.	n.a.	16,615[5]
Other types of ownership[1]	n.a.	1,170	2,088	1,626
TOTAL[6]	**154,500**	**154,920**	**153,920**	**149,300**

Notes: *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).

1. Includes 'Joint' ownership plantation class along with 'unknown' or 'Unresolved'

2. Ownership proportion from SOFR 1998 applied to *'Australia's derived 1997 FAO Forest Extent'* (see comments to Table 1), with 1997 plantation figures from National Plantation Inventory 2000 and National Plantation Inventory 1997 data
3. Ownership proportion from SOFR 2003 applied to *'Australia's derived 2002 FAO Forest Extent'* (see comments to Table 1)
4. 2007 National Forest Inventory forest extent: Native Forest: SOFR 2008; Plantation: NPI 2008
5. From SOFR 2008, table 96, which cites a total of 20,848,440 ha but includes indigenous management on publicly owned forest. The area privately owned is a subset of the total.
6. Total figures for 1990, 2000 and 2005 are *Australia's derived FAO forest extents*.
7. Figures may not tally exactly due to rounding

Does ownership of trees coincide with ownership of the land on which they are situated?		Yes
	X	No
If **No** above, please describe below how the two differ:		
Joint venture ownership class for plantations is reported in 'Other', and includes arrangements whereby land ownership differs from tree ownership.		

Table 2b - Holder of management rights of public forests

FRA 2010 Categories	Public forest area (1000 hectares)			
	1990	2000	2005	2010
Public Administration[1]	n.a.	46,624	43,715	43,293
Individuals	n.a.	n.a.	n.a.	n.a.
Private corporations and institutions[2]	n.a.	65,216	70,769	65,132
Communities	n.a.	n.a.	n.a.	n.a.
Other	n.a.	n.a.	n.a.	n.a.
TOTAL	n.a.	**111,840**	**114,483**	**108,425**

Note: *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

In response to a request by FAO in August 2009, to address the mapping inconsistencies between 1998, 2003 and 2008, a set of derived forest extent figures are reported here for 1990, 2000 and 2005. Referred to as *Australia's derived FAO forest extent,* the figures have been calculated using the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program for the years 1990 to 2007, and the 2008 National Forest Inventory forest extent (native forest - Australia's State of the Forest Report 2008; plantation extent - Australia's National Plantation Inventory 2008). The tenure, forest type and structure proportions for the 2000 and 2005 figures are from Australia's 1998 and 2003 State of the Forest Reports. 1990 forest area by tenure is only known for plantations, as per Table 2.2.3Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods especially in Australia's woodland forests (20-50% crown cover). To provide the five-year time period required by FAO, 1997 forest are reported in 2000; 2002 forest are reported in 2005; and 2007 forest figures are reported in 2010.

1. Includes Multiple Use, Nature conservation reserve, Other crown land and Public Plantations
2. Includes Leasehold land only (public land under private leasehold arrangements). All leasehold forests have been reported in the 'Private corporations and institutions' category as Australia does not have a breakdown between this category and the 'Individuals' category.

Differing tenure and ownership regimes exist across each of Australia's States and Territories. As such, there is no nationally consistent tenure classification which would enable the identification of management rights of public forests under private management (Leasehold land and Other Crown land).

2.5 Comments to Table T2

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend (2005-2010)
Public ownership		The trend in public ownership is most likely due to improvements in forest mapping, especially in woodland forest, between 1998, 2003 and 2008 which inform the percentage ownership for 2000, 2005 and 2010 respectively, rather than actual tenure changes.
Private ownership		Increase in Private is likely to be due to increases in the plantation estate, along with improved forest mapping between the time periods.
Other types of ownership	Joint ownership: where both public and private parties have some equity in the tree crop.	
Management rights	Management rights of public forests includes Multiple use forests and Nature conservation reserves, and publicly managed plantations on crown land.	

Other general comments to the table

- *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.
- In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).
- To provide the five-year time period required by FAO, 1997 derived forest figures are reported in 2000; 2002 derived forest figures are reported in 2005; and 2007 forest figures are reported in 2010.
- Public ownership includes public land leased to private parties on short and long term leases.
- The National Plantation Inventory collects data on both land and tree ownership classes.

3 Table T3 – Forest designation and management

Australia does not have a classification system that can directly report on the Designated Function classes used by FRA. The reclassification shows the reclassification to convert land tenure data into function classes.

Plantations have been included in Production primary function class.

Designation is not generally reported for private forest areas. In the Australian state of Tasmania, private forest owners who manage, or intend to manage, their land for wood production can list their properties as Private Timber Reserves. For leasehold forests it will depend on the utilisation of the land.

In most forests in which wood production is not legally restricted, timber harvesting is restricted according to codes of practice including within stream reserves, steep slopes, sensitive soils, and in the habitats of rare plants or animals. However, these are not generally mapped or geographically designated in tenure databases or in strategic management plans. They are often mapped in larger-scale operational plans once detailed assessments are undertaken.

The primary functions for many multiple use public native forests in Australia are to protect soil, water, heritage and biodiversity values. Wood production can only occur if these values (and others such as visual amenity, recreation) are provided for through codes of forest practice and other state regulations. Codes of practice and other state regulations provide similar prescriptions for timber harvesting related activities in plantations and private forests.

3.1 FRA 2010 Categories and definitions

Term	**Definition**
Primary designated function	The primary function or management objective assigned to a management unit either by legal prescription, documented decision of the landowner/manager, or evidence provided by documented studies of forest management practices and customary use.
Protected areas	Areas especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.
Categories of primary designated functions	
Production	Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.
Protection of soil and water	Forest area designated primarily for protection of soil and water.
Conservation of biodiversity	Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas.
Social services	Forest area designated primarily for social services.
Multiple use/purpose	Forest area designated primarily for more than one purpose and where none of these alone is considered as the predominant designated function.
Other	Forest areas designated primarily for a function other than production, protection, conservation, social services or multiple use.
No / unknown	No or unknown designation.
Special designation and management categories	
Area of permanent forest estate (PFE)	Forest area that is designated to be retained as forest and may not be converted to other land use.
Forest area within protected areas	Forest area within formally established protected areas independently of the purpose for which the protected areas were established.
Forest area under sustain-able forest management	To be defined and documented by the country.
Forest area with management plan	Forest area that has a long-term (ten years or more) documented management plan, aiming at defined management goals, which is periodically revised.

Note: The FAO term Multiple Use/Purpose applies to the primary designated function of the forest, and should not be confused with Australia's national forest tenure category 'Multiple-use public forest'.

3.2 National data

3.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest; • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
National Forest Inventory (2003). *Australia's State of the Forests Report 2003.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992-2002	This report was the most comprehensive report and national assessment of Australia's forests at the time. SOFR 2003 was compiled from numerous spatial data sets between 1992 and 2002 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > State of the Forests Report
National Forest Inventory (1998). *Australia's State of the Forests Report 1998*. Bureau of Rural Sciences, Canberra.	H	Forest area, forest type	1992-1998	Compiled from numerous spatial data sets between 1992 and 1998 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > State of the Forests Report > State of the Forests Report 1998

3.2.2 Classification and definitions

National class	Definition
Leasehold land	Crown land held under leasehold title. It is generally regarded as 'privately managed' as much of the land is leased for agricultural livestock grazing. It includes land held under leasehold title with special conditions attached for designated Indigenous communities.
Multiple–use forest	Crown land: State forest, timber reserves and other forest areas on which a range of forest values are managed including timber harvesting, water supply, conservation of biodiversity, recreation and environmental protection. They are managed by State and Territory agencies in accordance with State/Territory Acts and regulations.
Nature conservation reserve	Crown lands that are formally reserved for environmental, conservation and recreational purposes. They include national parks, nature reserves, State and Territory recreation and conservation areas, and Crown lands reserved to protect water supply catchments.
Private land	Land held under freehold title and under private ownership. It includes land held under freehold title with special conditions attached for designated Indigenous communities.
Other crown land	Crown land reserved for a variety of purposes including utilities, scientific research, education, stock routes, mining, use by the armed forces, and use by Indigenous communities.
Unresolved tenure	Areas identified where tenure is unknown or for which there are no data. Most of these are methodological rather than tenure issues.

3.2.3 Original data

National tenure classes published in national reports ('000 hectares) and proportion of total

Australian National Classes[1]	**1997 forest area**	***'97 %***	**2002 forest area**	***'02 %***	**2007 forest area**	***'07 %***
Multiple Use Forest	13,351	*9*	11,395	*7*	9,410	*6*
Nature Conservation Reserve	17,580	*11*	21,491	*13*	22,371	*15*
Other Crown Land	15,597	*10*	13,143	*8*	10,862	*7*
Private	42,018	*27*	38,928	*24*	38,099	*26*
Leasehold	66,103	*42*	75,596	*46*	65,132	*44*
Unresolved Tenure	1,186	*1*	2,127	*1*	1,524	*1*
Sub-total native forest	***155,835***[1]	*100*	***162,680***[2]	*100*	***147,398***[3]	*100*
Public	720		625		650	
Private	456		906		1,151	
Joint ownership	0		95		98	
Unknown	0		2		4	
Plantation	1,176[4]		1,628[5]		1,903[6]	
Total	**157,011**		**164,308**		**149,300**	

Notes: Totals may not tally exactly due to rounding

- See Comments to National reporting table T1 and T3 for more detailed explanation
- Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods in Australia's woodland forests (20-50% crown cover). This largely explains the revision of estimated total forest area from 2000 to 2005 to 2010; little of the change is due to real forest loss.

1. 1997 National Forest Inventory forest extent– Native Forest: SOFR 1998
2. 2002 National Forest Inventory forest extent– Native Forest: SOFR 2003.
3. 2007 National Forest Inventory forest extent– Native Forest: SOFR 2008
4. 1997 plantation extent: Based on National Plantation Inventory 1997 and National Plantation Inventory 2000 data.
5. 2002 plantation extent: National Plantation Inventory 2003.
6. 2007 plantation extent: National Plantation Inventory 2008

IUCN Data published for Australia's forests

Native forest in IUCN categories	Ia	Ib	II	III	IV	V	VI	**Total IUCN I-VI**	Total Native Forest ('000 ha)
1997 (%)[1]	0.75	0.53	7.55	0.11	1.96	1.69	0.28	**13%**	155,835
1997 (ha)	1,169	826	11,766	171	3,054	2,634	436	**20,056**	
2002 (%)[2]	2.8	1.6	8.8	0.1	0.2	0.2	1.3	**15%**	162,680
2002 (ha)	4,555	2,603	14,316	163	325	325	2,115	**24,402**	
2007 (%)[4]	3	2.3	10.1	0.2	0.3	0.2	2.2	**18%**	147,398
2007 (ha)[3]	4,179	3,451	14,875	223	372	282	3,239	**26,621**	

Notes

1. SOFR 1998, Table 11, p40
2. SOFR 2003, Table 13, p47
3. SOFR 2008, Table 14, p24
4. Calculated from SOFR 2008, Table 14, p24

3.3 Analysis and processing of national data

3.3.1 Calibration

No calibration is undertaken (see Table 1).

3.3.2 Estimation and forecasting

The table below shows the distribution of designated function to tenure classes. Figures are calculated based on 2007 native forest (SOFR 2008) and 2007 plantation (NPI 2008), with ANGA 2009 forest cover change figures applied, and ownership proportions from 1998 SOFR and 2003 SOFR for 2000 and 2005 respectively using the tenure data from Table 2 (forest ownership) for designated function.

3.3.3 Reclassification into FRA 2010 categories

	FRA 2010 classes							
Australian National Classes	Production	Protection of soil & water	Conservation of biodiversity	Social services	Multiple use/ purpose	Other	No or unknown function	**Total**
Multiple Use Forest					100%			100%
Plantation	100%							100%
Nature Conservation Reserve			100%					100%
Other Crown Land					100%			100%
Private					100%			100%
Leasehold						100%		100%
Unresolved Tenure							100%	100%

3.4 Data for Table T3

Table 3a – Primary designated function

FRA 2010 Categories	Forest area (1000 hectares)			
	1990[1]	2000[2]	2005[3]	2010[4]
Production	1,023	1,176	1,628	1,903
Protection of soil and water	n.a.	n.a.	n.a.	n.a.
Conservation of biodiversity	n.a.	17,344	20,119	22,371
Social services	n.a.	n.a.	n.a.	n.a.
Multiple use/purpose	n.a.	70,014	59,413	58,371
Other (please specify in comments below the table)	n.a.	65,216	70,769	65,132
No / unknown[5]	n.a.	1,170	1,991	1,524
TOTAL	**154,500**	**154,920**	**153,920**	**149,300**

Notes: *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).

1. 1990 – Plantation data only (Australian Bureau of Agriculture and Resource Economics 'Australian Forest Resources 1990 and 1991). The definition of native forest in 1990 applied only to commercially productive forests and therefore published figures are completely inconsistent with the National Forest Inventory forest definition and extent. 1990 total forest based on *Australia's derived FAO forest extent 1990*
2. Proportions from SOFR 1998 (native) and NPI 1998 (plantation) applied to *Australia's derived FAO forest extent 1997*
3. Proportions from SOFR 2003 (native) and NPI 2003 (plantation) applied to *Australia's derived FAO forest extent 2002*
4. Native Forest: SOFR 2008; Plantation: NPI 2008
5. Includes 'unknown' or 'Unresolved' tenure for native forest only. All plantation areas are included in the Production category.

Total may not tally exactly due to rounding

Table 3b – Special designation and management categories

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Area of permanent forest estate	n.a.	30,516	30,786	31,781
Forest area within protected areas[1]	n.a.	20,056	24,402	26,621
Forest area under sustainable forest management[2]	n.a.	31,197	31,705[3]	32,862[3]
Forest area with management plan	n.a.	30,516	30,786	31,781

Notes: *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods in Australia's woodland forests (20-50% crown cover). This largely explains the revision of estimated total forest area from 2000 to 2005 to 2010 reported in Australia's 1998, 2003 and 2008 State of the Forests Reports; little of the change is due to real forest loss.

In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government

Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).

1. Figures from 1998, 2003 and 2008 State of the Forests Reports for forests in IUCN protected area categories I-VI.
2. Includes all plantations where mandatory requirements for forestry codes of practice apply (Australian Capital Territory, New South Wales, Victoria, Tasmania) and Multiple-use public forests and Nature Conservation Reserves.
3. Includes Multiple-use public native forests, Nature Conservation Reserves and plantations in the Northern Territory that were approved under the EPBC Act (1999).

3.5 Comments to Table T3

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Production	Plantation data only	The trend reflects the increase in Australia's plantation extent.
Protection of soil and water	Not nationally classified or reported	
Conservation of biodiversity	Nature Conservation Reserves	
Social services	Not nationally classified or reported	
Multiple use/purpose	Includes Multiple-use forest, Other crown lands, and Private forest	The decrease in the reflects a number of processes including the negotiation of Regional Forest Agreements in the late 1990s and early part of this decade, which led to an increase in the area of Nature Conservation Reserves (Conservation of biodiversity category) and a decrease in the area of Australia's Multiple-use public forests (FRA 'multiple use/purpose' category) (Refer to SOFR 2008 – p xvii and p185). Furthermore, landclearing through this timeframe may have occurred on private land which would add to the observed decline.
Other	Includes Leasehold forests	The trend is likely to reflect improvements in the ability of states and territories to estimate forest extent with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods in Australia's woodland forests (20-50% crown cover). This largely explains the revision of estimated total forest area from 2000 to 2005 to 2010; little of the change is due to real forest loss.
No / unknown designation	Includes 'unknown' or 'Unresolved' tenure of native forest	
Area of permanent forest estate	Not nationally classified or reported but for the purposes of FRA reporting, Multiple-use forest and Nature conservation reserve areas are included.	
Forest area within protected areas	Forests in IUCN protected area categories I-VI	See Other general comments to Table : Note #8.
Forest area under sustainable forest management	Multiple-use forest and Nature conservation reserves, and plantations (public and private) in States with mandatory requirements for codes of practice or approved under the Environmental Protection	

	Biodiversity and Conservation Act 1999 (Commonwealth).	
Forest area with management plan	Includes both Multiple-use forest and Nature conservation reserves	

Other general comments to the table

Australia's derived FAO forest extent figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

1. In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).
2. To provide the five-year time period required by FAO, 1997 derived forest figures are reported in 2000; 2002 derived forest figures are reported in 2005; and 2007 forest figures are reported in 2010.
3. Australia does not have a classification system that can directly report on the Designated Function classes used by FRA. The reclassification shows the fairly arbitrary reclassification done to convert land tenure data into function classes. Several of the tenures actually fulfil more than one function, notably Australia's *Multiple–use forest* tenure class. In previous reports this class (*Multiple–use forest)* has been included in the 'Production' category, but in recognition of their management for multiple values, they are now included in FAO's 'Multiple use/purpose' category.
4. Plantations have been included in Production primary function class.
5. For private forest areas designation is not generally reported. In Tasmania, private forest owners who managed, or intend to manage, their land for wood production can list their properties as Private Timber Reserves. For leasehold forests it will depend on the utilisation of the land.
6. In all forests 'designated' for wood production, harvesting is restricted from sensitive areas including stream reserves, steep slopes, sensitive soils and in rare plant or animal habitats through the implementation of comprehensive codes of forest practice. However, these are not generally mapped or geographically designated in tenure databases or in strategic management plans. They are often mapped in larger-scale when detailed assessments to develop operational plans are undertaken.
7. The primary functions for many public native forests in Australia are to protect soil, water and biodiversity including those used for timber production (Multiple-use forest). Harvesting can only occur if these values (and others such as visual amenity, recreation) are provided for. Codes of practice and other state regulations provide similar limitations during harvest management planning for plantations and private native forests.
8. IUCN protected area categories I-VI, identified in each of the 1998, 2003 and 2008 State of the Forest Reports, are included in each of the reporting years. Note that a comparison of forest area between each reporting year is complicated by the improved mapping of Australia's forests, and therefore the change in the baseline national forest extent, between each reporting year. Notwithstanding, the proportion of Australia's forests in IUCN protected area **categories I-VI** has changed from 13% (or 20,056,000 ha) in 1998, to 15% (or 24,402,000 ha) in 2003, to 18% (or 26,621,000 ha) in 2008. The original published figures are provided in Table 3 to maintain consistency with other IUCN reporting processes.
9. Two major forest certification schemes operate in Australia — the Australian Forest Certification Scheme (AFCS) and the scheme operated by the Forest Stewardship Council. Both have a forest management standard and a chain-of-custody standard (which certifies that a product came from a particular forest area). By September 2007, 8.55 million hectares of native and plantation forests had been certified under the AFCS and 550,000 hectares of plantations had been certified under the Forest Stewardship Council. See MIG 2008, p. 192; http://www.forestrystandard.org.au/default.asp; and http://www.fscaustralia.org/.

4 Table T4 – Forest characteristics

4.1 FRA 2010 Categories and definitions

Term / category	Definition
Naturally regenerated forest	Forest predominantly composed of trees established through natural regeneration.
Introduced species	A species, subspecies or lower taxon, occurring outside its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans).
Characteristics categories	
Primary forest	Naturally regenerated forest of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.
Other naturally regenerated forest	Naturally regenerated forest where there are clearly visible indications of human activities.
Other naturally regenerated forest of introduced species *(sub-category)*	Other naturally regenerated forest where the trees are predominantly of introduced species.
Planted forest	Forest predominantly composed of trees established through planting and/or deliberate seeding.
Planted forest of introduced species *(sub-category)*	Planted forest, where the planted/seeded trees are predominantly of introduced species.
Special categories	
Rubber plantations	Forest area with rubber tree plantations.
Mangroves	Area of forest and other wooded land with mangrove vegetation.
Bamboo	Area of forest and other wooded land with predominant bamboo vegetation.

4.2 National data

4.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest; • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
Keenan, R.J. and Ryan, M. (2004 Revised 2006) *Old growth forests. Science for Decision makers,* Bureau of Rural Sciences, Canberra 8pp.	H	Old growth forest area	Up to 2002	Used data from the Comprehensive Regional Assessment (CRA) process under the Regional Forest Agreements which formed part of the 1992 National Forest Policy.

4.2.2 Classification and definitions

Australia's National class	Definition
Old growth forest	Forest that is ecologically mature and has been subjected to negligible unnatural disturbance such as logging, roading and clearing. The definition focuses on forest in which the upper stratum or overstorey is in the late mature to over mature growth phases. This definition has been amended to produce an agreed National operational interpretation as follows: "Old-growth forest is ecologically mature forest where the effects of disturbances are now negligible".

4.2.3 Original data

	1990	1998	2003	2008
Old growth ('000 ha)	n.a.	n.a.	5,233	5,039

Source:
1990 and 1998: Not available – the capture of old-growth information was compiled largely through the Regional Forest Agreement process from 1999 to 2001
2003: SOFR 2003 – T39, page 86 – not nationally complete
2008: SOFR 2008 – T9, page 18 – not nationally complete

Old growth forests in Australia are defined as '*Ecologically mature forest where the effects of disturbances are now negligible.* This broadly corresponds to the definition of Primary Forest used in the FRA2010.

Plantation figures (hectares)

Plantation	1990	1997	2002	2007
Softwood	926,406	924,056	987,864	1,010,155
Introduced species				
Pinus spp.	879521			
Native species				
Araucaria	46885			
Hardwood	96,469	252,001	638,337	883,494
Other/unknown	0	0	1,626	9,254
Total	1,022,875	1,176,057	1,627,827	1,902,903

Source:
- 1991 Australian Bureau of Agriculture and Resource Economics 'Australian Forest Resources 1990 and 1991'.
- 1997 figures based on National Plantation Inventory 2000 and NPI 1997
- National Plantation Inventory Updates 2002 and 2008

	1990	1998	2003	2008
Mangroves ('000 ha)	n.a.	1,045	749	980

Source:
1990: Not available
1998: SOFR 1998 – T1, page 31
2003: SOFR 2003 – T3, page 30
2008: SOFR 2008 – T2, page 7

4.3 Analysis and processing of national data

4.3.1 Calibration

No calibration is undertaken (see Table 1).

4.3.2 Estimation and forecasting

4.3.3 Reclassification into FRA 2010 categories

FRA Class	National Reporting Class
Primary	Old growth forests 100%
Other naturally regenerated forest	Other native forest 100%
Planted forest	Plantation 100%

4.4 Data for Table T4

Table 4a

FRA 2010 Categories	Forest area (1000 hectares)			
	1990	2000	2005	2010
Primary forest [5]	n.a.	n.a.	5,233	5,039
Other naturally regenerated forest	n.a.	n.a.	147,059	142,359
...of which of introduced species	0	0	0	0
Planted forest[3]	1,023	1,176	1,628	1,903
...of which of introduced species[4]	926	924	988	1,010
TOTAL[1,2]	**154,500**	**154,920**	**153,920**	**149,300**

Notes: *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.

1. Australia's ability to estimate its forest extent continues to improve with the increasing availability of high-resolution remotely sensed data and improvements in forest typing methods in Australia's woodland forests (20-50% crown cover). This largely explains the revision of estimated total forest area from 2000 to 2005 to 2010 reported in Australia's 1998, 2003 and 2008 State of the Forests Reports; little of the change is due to real forest loss.
   In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).
2. Figures may not tally exactly due to rounding
3. Includes forest planted for commercial harvest. Australia's National Plantation Inventory does not compile information on areas planted for environmental purposes
4. The introduced species are dominated by Pinus species, however, a small proportion (less than 5%) is Hoop Pine (*Araucaria cunninghamii*) which is native to Australia but was unable to be separated from the total softwood figures.
5. Old growth forest figures published in the 2003 and 2008 State of the Forest Reports have not been recalculated using the DCC Australian National Greenhouse Accounts May 2009 as it was not considered appropriate due to uncertainty in how the Forest cover change figures apply to old growth forests. The areas provided reflect fine scale mapping of old growth forests.

Table 4b

FRA 2010 Categories	Area (1000 hectares)			
	1990	2000	2005	2010
Rubber plantations (Forest)	0	0	0	0
Mangroves (Forest and OWL)	n.a.	1,045	749	980
Bamboo (Forest and OWL)	0	0	0	0

Notes: Mangrove extent figures published in the 1998, 2003 and 2008 State of the Forest Reports have not been recalculated using the DCC Australian National Greenhouse Accounts May 2009 as it was not considered appropriate due to uncertainty in how the forest cover change figures apply to mangrove forests. The 2005 extent is understood to be an underestimate due to mapping methodologies. Data for 1990 were unavailable.

4.5 Comments to Table T4

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Primary forest	Primary category comprises that classified as 'old growth forest' and assessed in areas where Comprehensive Regional Assessments were undertaken for Regional Forest Agreements.	Trend information on Primary Forests (old growth) is limited due to data limitations pre-2002.
Other naturally regenerating forest	All other native forest	Reported changes from 2000 – 2010 are primarily due to improvements in availability of high-resolution remotely sensed data and forest mapping techniques
Planted forest	Introduced Species figure uses 'Softwood' figure from 1998, 2003 and 2008 NPI reports. Hoop Pine (*Araucaria cunninghamii*), a native pine is not able to be identified in the 2000, 2005 and 2010 reporting years, however, it is not expected to be above the 5% identified in the 1990 area.	
Rubber plantations		
Mangroves		Reported changes from 2000 – 2010 are primarily due to improvements in availability of high-resolution remotely sensed data and forest mapping techniques.
Bamboo		

Other general comments to the table

- *Australia's derived FAO forest extent* figures have been calculated to meet the requirements of FAO's Global Forest Resource Assessment 2010 for the purposes of providing regional and global forest trend information, and are not used for country-level reporting.
- In response to a request by FAO in August 2009, historic forest cover figures have been derived to present a more realistic change in forest cover. *Australia's National Greenhouse Accounts* (May, 2009) (ANGA) provide a suitable measure of forest cover change for the 1990, 2000 and 2005 time periods sought by FAO. These derived estimates, to be referred to as 'Australia's derived FAO forest extent', reflect the most recent native forest extent identified by states and territories in Australia's 2008 State of the Forest Report, and plantation figures from the National Plantation Inventory 2008, with the latest forest cover change data from the Australian Government Department of Climate Change's (DCC) *Australia's National Greenhouse Accounts National Inventory Report* (May 2009) developed for carbon accounting purposes and derived from the DCC National Carbon Accounting System remote sensing program. (refer to Introduction and Table 1 for further discussion).
- The area of old growth forests in remaining regions is likely to be small because most forest are open and woodland forests that have been subject to past human-induced fires and other disturbances such as grazing or harvesting or are regrowth following conversion to agriculture. Remaining rainforest areas in Australia have been subject to some harvesting or other human disturbance. Many could be validly described as

primary forest. Thus, the area of primary forest reported is an underestimate.

- Some plantations established for wood production also perform protective functions.
- There have been considerable tree planting efforts in the last 20 years under a range of government programs for aesthetic, nature conservation, soil erosion protection or to maintain water quality. In addition, many private farmers have been undertaking some tree planting primarily for protective purposes but these areas are not known. There are no comprehensive statistics for these types of forest.

5 Table T5 – Forest establishment and reforestation

Forest establishment and reforestation has been assessed on some parts of the forest estate that are used or planned for wood production in Australia. Assessment methods and monitoring standards vary between state and region.

There are therefore insufficient data to compile a meaningful estimate at the national level.

5.1 FRA 2010 Categories and definitions

Term	Definition
Afforestation	Establishment of forest through planting and/or deliberate seeding on land that, until then, was not classified as forest.
Reforestation	Re-establishment of forest through planting and/or deliberate seeding on land classified as forest.
Natural expansion of forest	Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).

5.2 National data

5.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest; • area • type • tenure • carbon • employment • fire • health • policy • education • management	2002 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
Gavran & Parsons (2009). *National Plantation Inventory 2009.* Bureau of Rural Sciences, Canberra.	H	Plantation extent, ownership, species composition, annual planting rate by State	2009	This report is provides and annual update on Australia's plantation estate based on information provided by growers and regional representatives in tabular form (i.e. numbers but no maps or spatial data). www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences > National Forest Inventory Australia > National Plantation Inventory
Davidson J., Davey S., Singh S., Parsons M., Stokes B., Gerrand A. (2008). *The Changing Face of Australia's Forests,* Bureau of Rural Sciences, Canberra.	H	Forest Area, Forest Type	2008	This report summarises the major changes in forest use and management since the National Forestry Policy Statement was agreed in 1992. http://adl.brs.gov.au/forestsaustralia or http://www.affashop.gov.au/product.asp?prodid=13892
National Forest Inventory (2005). *National Plantation Inventory 2005 Update.* M. Parsons and M. Gavran. Bureau of Rural	H	Plantation extent, ownership, species composition, annual	2003	This report is provides and annual update on Australia's plantation estate based on information provided by growers and regional representatives in tabular form (i.e. numbers but no maps or spatial data). www. DAFF Home > Scientific Advice HOME > Forest and Vegetation Sciences >

Sciences, Canberra (8pp.).		planting rate by State		National Forest Inventory Australia > National Plantation Inventory

5.2.2 Classification and definitions

Australia's National classes	Definition
Afforestation	Data provided are for commercial timber plantation development on previously cleared land.
Reforestation	Data on reforestation is not collected nationally. Reforestation in Australia includes forest naturally regenerated and plantations that were deliberately seeded or planted following harvest activities.

5.2.3 Original data

5.3 Analysis and processing of national data

5.3.1 Calibration

No calibration is undertaken (see Table 1).

5.3.2 Estimation and forecasting

5.3.3 Reclassification into FRA 2010 categories

5.4 Data for Table T5

FRA 2010 Categories	Annual forest establishment (hectares/year)			...of which of introduced species [1)] (hectares/year)		
	1990	2000	2005	1990	2000	2005
Afforestation[1]	15,000	90,000	50,000	10,000	10,000	4,000
Reforestation	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
...of which on areas previously planted	n.a	n.a	n.a	n.a	n.a	n.a
Natural expansion of forest[2]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes:

1. For the purposes of the FRA report, 'Afforestation' is taken to refer only to commercial plantation establishment on land that, until then, was not classified as forest. The annual afforestation rates are based on the 1990 to 2008 estimated area of plantations established on previously non-forest land of 727,000 hectares (18 year period). The figures are estimated averages for the subsequent time-period (viz: Average area of afforestation between 1990 and 2000 was 150,000 ha.; between 2000 and 2005 was 450,000 ha.; and between 2005 and 2010 was 250,000 ha.).

Comments to Table T5

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Afforestation	Data provided are for commercial timber plantation development on previously cleared land only. Reliable data are not available for each five year period. The annual afforestation rates are based on the 1990 to 2008 estimated area of plantations established on non-forest land of 727,000 hectares. The figures differ from the net increase in plantations identified in T4 because some of the plantation extent is on land previously classified as forest (ie. native forest converted to plantation forest). The vast majority of commercial timber plantation species are Australian native species, but are not necessarily endemic to the planting site.	Reliable data are not available for each five year period. The trend is known to be a substantial increase from the first to second period and a decline from the second to the third period.
Reforestation	As defined, this refers to re-establishment of native forests after timber harvesting, and re-establishment of plantations after timber harvesting, and conversion of native forest to plantation forest. Comprehensive data on this are not available, however, it is known that conversion of native forest to plantation forest is increasingly declining.	
Natural expansion of forest	While no data are available, anecdotal evidence indicates the area is likely to be significant.	

Other general comments to the table
• For the purposes of the FRA report, 'Afforestation' is taken to refer to commercial plantation establishment on land that, until then, was not classified as forest. The annual plantation inventory data back to 1990 do not distinguish between new plantations established on land that, until then, was not classified as forest, and new plantations established on previously forested land. Analysis for the FRA has identified an estimated area of plantations established on non-forest land of 727,000 hectares for the period 1990 to 2008. • Post 1990 plantings (both for harvest and not for harvest) are mapped by the DCC Landsat program for the purpose of producing estimates of sequestration due to reforestation activities under Kyoto Forest Article 3.3.

6 Table T6 – Growing stock

Information is not available for this reporting table.

Other general comments to the table
While growing stock has been assessed on some parts of the forest estate that are used or planned for wood production in Australia, assessment methods and merchantability standards vary between state and region. There are therefore insufficient data to compile a meaningful estimate at the national level.

7 Table T7 – Biomass stock

7.1 FRA 2010 Categories and definitions

Category	Definition
Above-ground biomass	All living biomass above the soil including stem, stump, branches, bark, seeds, and foliage.
Below-ground biomass	All biomass of live roots. Fine roots of less than 2mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.
Dead wood	All non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.

7.2 National data

7.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Department of Climate Change (2008) National Inventory Report 2006 – Volume 2 Part A. The Australian Government Submission to the UN Framework Convention on Climate Change. June 2008	H	Change in area of forest over time from 1990 to 2004	1990 – 2004	The Department of Climate Change National Carbon Accounting System (NCAS) provides a picture of land cover change for the purposes of greenhouse gas accounting using a nationally applied remote sensing approach over Australia based on LANDSAT satellite imagery to map woody vegetation extent at 25m resolution for several time periods since 1972. http://www.dcc.gov.au/ncas/ See comments for Table 1 under section 1.6.
Brack CL, Richards G, Waterworth R (2006) Integrated and comprehensive estimation of greenhouse gas emissions from land systems. Sustainability Science 1:91-106.	H			
Richards C, Brack C (2004)	H			

A continental biomass stock and change estimation approach for Australia. Australian Forestry 67:248-288.				
Department of Climate Change (2002). *National Greenhouse Gas Inventory 2000.* Department of Climate Change, Canberra.	H		2003	

7.2.2 Classification and definitions

National class	Definition

7.2.3 Original data

Note: Source of 2005 data - SOFR2003 pp201 Table 69. National forest type by area and carbon biomass

Major Vegetation Group	Above Ground Biomass (MtDM)	Root Biomass (MtDM)	Forest Floor Biomass (MtDM)	Total Biomass (MtDM)	Total Carbon (MtC)
Rainforest and Vine Thickets	844	84	403	1,331	599
Eucalyptus Tall Open Forest	670	94	429	1,193	537
Eucalyptus Open Forest	4,091	1,841	1,853	7,785	3,503
Eucalyptus Low Open Forest	35	16	14	64	29
Eucalyptus Woodland	3,206	1,315	851	5,372	2,417
Tropical Eucalyptus Woodland/Grassland	1,242	509	378	2,130	958
Acacia Forest and Woodland	445	200	300	945	425
Callitris Forest and Woodland	66	30	24	119	54
Casuarina Forest and Woodland	33	15	24	72	32
Melaleuca Forest and Woodland	311	140	76	526	237
Mallee Woodland and Shrubland	311	298	73	682	307
Low Closed Forest and Closed Shrubland	60	57	4	121	54
Other forest and woodlands	1,512	916	477	2,905	1,307
Total Native Forest	12,824	5,515	4,905	23,244	10,460
Softwood Plantation	82	57	3	142	71
Hardwood Plantation	23	9	1	33	17
Total Plantation	105	66	4	176	88

Total Forest	12,929	5,581	4,909	23,420	10,548

Original data source:

Department of Climate Change (2002). Greenhouse Gas Emissions from Land Use Change in Australia: An Integrated Application of the National Carbon Accounting System. Department of Climate Change, Canberra.

Department of Climate Change (2002). National Greenhouse Gas Inventory 2000. Department of Climate Change, Canberra.

Note that these biomass estimates as presented in FRA2005 (and reported in SOFR 2003) were derived from the National Vegetation Information System which covers a broader range of vegetation types than that in the National Forest Inventory "forests" layer.

The aboveground biomass estimates reported for FRA 2010 have been derived using the DCC woody vegetation extent data and the spatially explicit biomass modelling component of the NCAS. Note that the NVIS data do not represent the DCC woody vegetation extent. The model results are split into the NVIS classes, as used by DCC, purely for reporting purposes.

Aboveground biomass includes all living aboveground biomass (i.e. not including standing dead trees) and is modelled using the Full Carbon Accounting Model (FullCAM). The methods used are detailed in Richards and Brack, 2004 and Brack et al. 2006.

7.3 Analysis and processing of national data

7.3.1 Calibration

No calibration is undertaken (see Table 1).

7.3.2 Estimation and forecasting

The methods used in T7 are detailed in Richards and Brack, 2004, and Brack et al. 2006

7.3.3 Reclassification into FRA 2010 categories

None

7.4 Data for Table T7

FRA 2010 category	Biomass (million metric tonnes oven-dry weight)							
	Forest				Other wooded land			
	1990	2000	2005[1]	2010	1990	2000	2005	2010
Above-ground biomass	9,474	9,446	9,363	n.a.	n.a.	n.a.	n.a.	n.a.
Below-ground biomass	3,974	3,957	3,918	n.a.	n.a.	n.a.	n.a.	n.a.
Dead wood	3,381	3,371	3,364	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	**16,829**	**16,774**	**16,645**	n.a.	n.a.	n.a.	n.a.	n.a.

Notes: 1990 and 2000 data are for the actual years. Note that the 2005 data is actually 2004 data which was the last period for the analysis, carried out for the 2008 SOFR. The biomass and deadwood data are for all woody vegetation (native and plantation).

1. 2004 Data
2. Forecasts for 2010 were not available. The next set of inventory numbers will be rerun in Dec '09, however, a new set of numbers will not be available until the inventory is completed.

7.5 Comments to Table T7

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Above-ground biomass	Aboveground biomass includes all living aboveground biomass (i.e. not including standing dead trees) and is modelled using the Full Carbon Accounting Model (FullCAM). The methods used are detailed in Richards and Brack, 2004 and Brack et al. 2006.	These are estimates only and do not represent modelled changes as used in Australia's National Greenhouse Gas Inventory.
Below-ground biomass	Belowground biomass includes all living belowground biomass (i.e. not including dead root material) and is modelled using the Full Carbon Accounting Model (FullCAM). The methods used are detailed in Richards and Brack, 2004 and Brack et al. 2006.	These are estimates only and do not represent modelled changes as used in Australia's National Greenhouse Gas Inventory.
Dead wood	Deadwood estimates are based on the initial debris estimates used in Australia's National Greenhouse Gas Inventory and the DCC woody vegetation extent data.	The deadwood numbers here include all standing dead material, coarse woody debris, litter, stumps and roots. These are estimates only, based on initial debris estimates used in Australia's National Greenhouse Gas Inventory and do not represent modelled changes. These numbers are within the ranges reported for Australian forest types and represent the lack of intensive forest management across the vast majority of Australia's forests. These data have been drawn from assessments carried out for the National Carbon Accounting System as described in Murphy et. al. 2002, Griffin et. al. 2002, Harms and Dalal 2002, and Harms et. al. 2005. A separate study by Mackensen and Bauhaus (1999) has also been drawn upon.

Other general comments to the table
Note that figures provided in T7 are based on DCC's woody vegetation extent data. The aboveground biomass estimates reported for FRA 2010 have been derived using the DCC woody vegetation extent data and the spatially explicit biomass modelling component of the NCAS. Note that the NVIS data do not represent the DCC woody vegetation extent. The model results are split into the NVIS classes, as used by DCC, purely for reporting purposes. The amount of biomass is calculated using a biomass model linked to the forested areas as defined by the DCC remote sensing. This method is detailed in the 2009 Australian National Greenhouse Accounts National Inventory Report (May, 2009).

8 Table T8 – Carbon stock

8.1 FRA 2010 Categories and definitions

Category	Definition
Carbon in above-ground biomass	Carbon in all living biomass above the soil, including stem, stump, branches, bark, seeds, and foliage.
Carbon in below-ground biomass	Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded, because these often cannot be distinguished empirically from soil organic matter or litter.
Carbon in dead wood	Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots, and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.
Carbon in litter	Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm), lying dead in various states of decomposition above the mineral or organic soil.
Soil carbon	Organic carbon in mineral and organic soils (including peat) to a specified depth chosen by the country and applied consistently through the time series.

8.2 National data

8.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest; • area • type • tenure • carbon • employment • fire • health • policy • education • management	2002 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
Department of Climate Change (2008) National Inventory Report 2007 – Volume 2 Part A. The Australian Government Submission to the UN Framework Convention on Climate Change. May 2009	H	Change in area of woody vegetation over time from 1990 to 2004	1990 – 2004	The Department of Climate Change National Carbon Accounting System (NCAS) provides a picture of land cover change for the purposes of greenhouse gas accounting using a nationally applied remote sensing approach over Australia based on LANDSAT satellite imagery to map woody vegetation extent at 25m resolution for several time periods since 1972. http://www.dcc.gov.au/ncas/ See comments for Table 1 under section 1.6.
Brack CL, Richards G, Waterworth R (2006)	H			

Integrated and comprehensive estimation of greenhouse gas emissions from land systems. Sustainability Science 1:91-106.				
Richards C, Brack C (2004) A continental biomass stock and change estimation approach for Australia. Australian Forestry 67:248-288.	H			

8.2.2 Classification and definitions

National class	Definition

8.2.3 Original data

The methods used in T8 are detailed in Richards and Brack, 2004, and Brack et al. 2006

The soil carbon estimate is made using a single forest extent from the NCAS overlaid on initial soil C. This reflects the ephemeral nature of many changes in Australia forest cover through time, in particular in response to drought, which may affect forest extent but have less effect on total soil C. Using the forest area numbers in T1 to estimate 'tonnes per hectare' is therefore incorrect.

8.3 Analysis and processing of national data

8.3.1 Calibration

No calibration is undertaken (see Table 1).

8.3.2 Estimation and forecasting

8.3.3 Reclassification into FRA 2010 categories

8.4 Data for Table T8

FRA 2010 Category	Carbon (Million metric tonnes) [1]							
	Forest[2,3]				Other wooded land			
	1990	2000	2005	2010	1990	2000	2005	2010
Carbon in above-ground biomass	4,737	4,723	4,682	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in below-ground biomass	1,987	1,979	1,959	n.a.	n.a.	n.a.	n.a.	n.a.

Sub-total: Living biomass	*6,724*	*6,702*	*6,641*	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in dead wood	1,521	1,517	1,514	n.a.	n.a.	n.a.	n.a.	n.a.
Carbon in litter	1,086	1,084	1,079	n.a.	n.a.	n.a.	n.a.	n.a.
Sub-total: Dead wood and litter	*2,607*	*2,601*	*2,593*	n.a.	n.a.	n.a.	n.a.	n.a.
Soil carbon	5,506	5,506	5,506	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL	14,837	14,809	14,740	n.a.	n.a.	n.a.	n.a.	n.a.

Notes:

1. For all woody vegetation (native and plantations). These are estimates only and do not represent modelled changes as used in Australia's National Greenhouse Gas Inventory. Figures presented against 2005 are actually 2004.
2. Figures apply to DCC's woody vegetation extent and not Australia's forest extent. The carbon figures, which have been calculated using Australia's National Carbon Accounting System, are based on a consistent time series of woody vegetation extent integrated with biomass modelling, and are Australia's formal carbon figures.
3. Includes plantations
4. Forecasts for 2010 are not available.
5. The soil carbon estimate is made using a single forest extent form the NCAS overlaid on initial soil C. This reflects the ephemeral nature of many changes in Australia forest cover through time, in particular in response to drought, which may affect forest extent but have less effect on total soil C. Using the forest area numbers in T1 to estimate a t/ha is therefore incorrect

Soil depth (cm) used for soil carbon estimates	30cm

8.5 Comments to Table T8

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Carbon in above-ground biomass		
Carbon in below-ground biomass		
Carbon in dead wood		
Carbon in litter		
Soil carbon		The soil carbon estimate is made using a single forest extent form the NCAS overlaid on initial soil C. This reflects the ephemeral nature of many changes in Australia forest cover through time, in particular in response to drought, which may affect forest extent but have less effect on total soil C. Using the

		forest area numbers in T1 to estimate a t/ha is therefore incorrect

Other general comments to the table
Note that figures provided in T8 are based on DCC's woody vegetation extent data. Figures apply to DCC's woody vegetation extent and not Australia's forest extent. The carbon figures, which have been calculated using Australia's National Carbon Accounting System, are based on a consistent time series of woody vegetation extent integrated with biomass modelling, and are Australia's formal carbon figures.

9 Table T9 – Forest fires

The degree of fire impacts varies significantly with location in Australia. The effects of fire are determined by the interaction of vegetation type, fire intensity, seasonality and fire history.

Fire is an inevitable, periodic event in most Australian forests that can have both positive and negative impacts on forest health and vitality. The impact of fire on the biota varies according to ecosystem sensitivity to fire, intensity and frequency, which in turn depends upon many factors including fuel availability, prevailing weather and the season. Whether started by humans or lightning, forest fires occur somewhere in Australia every year. However, although fire is an ecological disturbance, most forests are able to naturally regenerate, given appropriate climatic conditions, proximity to seed and sufficient recovery time between disturbances.

Tools for capturing information on fire management and reporting are increasingly available in some jurisdictions to assist fire management. However, there is currently no nationally coordinated approach to the systematic mapping and reporting of the extent, seasonality and intensity of fires and whether they are planned or unplanned. To support the reporting of this indicator, a nationwide analysis of fire using satellite imagery has been compiled for the first time; it has been used here to estimate fire occurrence in forests in northern Australia, complementing data provided by some states for forests in southern Australia.

In the period from 2001 to 2006, the estimated total area of forest burnt was 24.7 million hectares (or 4.95 million hectares per year). This estimate was determined using a combination of data on fire extent derived from satellite imagery (for the Northern Territory, Queensland and northern Western Australia) and data supplied by state agencies in New South Wales, South Australia, Tasmania, Victoria and Western Australia.
Of the total area affected by fire, an estimated 19.5 million hectares was in northern Australia and 5.2 million hectares was in southern Australia.

From 2000 to 2006, unplanned fires burnt an estimated 20.0 million hectares and planned fires burnt 4.7 million hectares of forest.

Fire is an important forest management tool in Australia because many forested ecosystems are ecologically adapted to fire and require it for regeneration. However, the amount of data on areas affected is very limited and insufficient to fully report for FRA Table T9.

9.1 FRA 2010 Categories and definitions

Category	Definition
Number of fires	Average number of vegetation fires per year in the country.
Area affected by fire	Average area affected by vegetation fires per year in the country.
Vegetation fire *(supplementary term)*	Any vegetation fire regardless of ignition source, damage or benefit.
Wildfire	Any unplanned and/or uncontrolled vegetation fire.
Planned fire	A vegetation fire regardless of ignition source that burns according to management objectives and requires limited or no suppression action.

9.2 National data

9.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments

Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html

9.2.2 Classification and definitions

National class	Definition
Unplanned Fire	Unplanned fire is defined as fire started naturally (such as by lightning), accidentally or deliberately (such as by arson) that is not in accordance with fire management prescriptions; the terms 'unplanned fire', 'bushfire' and 'wildfire' are used interchangeably.
Planned Fire	Planned fire is fire started in accordance with a fire management plan or some other type of planned burning program or bushfire-response procedure, such as fuel reduction (prescribed) burning

9.2.3 Original data

Table 9 – Impact of Forest Fires is a new table introduced in FRA 2010. Previously, fire impact information was to be included in Table T8 – Disturbances affecting health and vitality. Fire is an important forest management tool in Australia because native forest ecosystems are ecologically adapted to fire and require it for regeneration. However, the amount of data on areas affected is very limited and was insufficient to fully report for Table T8 in FRA 2005.

9.3 Analysis and processing of national data

9.3.1 Calibration

No calibration is undertaken (see Table 1).

9.3.2 Estimation and forecasting

Total area burned by planned and unplanned fire, 2001–02 to 2005–06, by jurisdiction (hectares) (MIG 2008, Table 44 pp. 83)

	2001–02	2002–03	2003–04	2004–05	2005–06	
NSW[a]						
Planned	51,039	73,904	134,794	70,173	56,411	
Unplanned	679,755	1,167,835	76,705	24,130	44,222	
NT						
Planned	915,165	282,893	225,680	647,665	157,571	
Unplanned	2,157,920	1,459,565	1,075,819	2,714,257	886,696	
Qld						
Planned	168,800	186,346	97,419	160,002	94,213	
Unplanned	2,189,488	1,319,413	948,369	1,240,991	1,144,032	
SA[b]						
Planned	129	103	141	103	77	
Unplanned	11	146	6	24	13	
Tas.						
Planned[c]	17,900	16,700	15,300	16,000	13,000	
Unplanned	378	32,468	60,203	11,472	787	
Vic[d]						
Planned	52,669	30,178	101,193	97,509	51,898	
Unplanned	38,448	1,141,828	12,167	19,157	103,975	
WA						
Planned	53,403	68,000	30,520	73,150	20,300	
Unplanned	196,031	364,288	160,405	348,521	136,372	
WA[e]						
Planned	87,330	130,780	171,930	186,380	182,400	
Unplanned	17,640	131,680	22,190	50,630	22,560	
Totals						**Totals**
Planned	1,346,435	788,904	776,977	1,250,982	575,870	4,739,168
Unplanned	5,279,671	5,617,223	2,355,864	4,409,182	2,338,657	20,000,597
All reported fires	**6,626,106**	**6,406,127**	**3,132,841**	**5,660,164**	**2,914,527**	**24,739,765**

a Data supplied by Forests NSW and the Department of Environment and Climate Change (NSW) for multiple-use and nature conservation reserve tenures only and may include non-forest areas.
b Data for ForestrySA plantations in multiple-use public forests and public nature conservation reserves only.
c Planned fires on Forestry Tasmania land only.
d Data supplied by the Department of Sustainability and Environment (Vic.). Data are for public land tenures only.
e Southwest forest region only.
Note: Unshaded cells show estimates supplied by state agencies for southern forests and shaded cells show estimates derived from MODIS imagery for northern forests. Totals may not tally due to rounding.

For reporting year 2000 the average of 2001-03 was used and for 2005 the average 2003-06.

9.3.3 Reclassification into FRA 2010 categories

9.4 Data for Table T9

Table 9a

FRA 2010 category	Annual average for 5-year period[2]					
	1990		2000[1]		2005	
	1000 hectares	number of fires	1000 hectares	number of fires	1000 hectares	number of fires
Total land area affected by fire	n.a	n.a	n.a	n.a	n.a	n.a
... of which on forest	n.a	n.a	6,516	n.a	3,903	n.a
... of which on other wooded land	n.a	n.a	n.a	n.a	n.a	n.a
... of which on other land	n.a	n.a	n.a	n.a	n.a	n.a

Notes:
1. Data only available for 2001-2002 only
2. The figures for the reporting years 2000 and 2005 refer to the averages of annually affected areas for the periods 2001-2003 and 2003-2006 respectively (MIG 2008)

Table 9b

FRA 2010 category	Proportion of forest area affected by fire (%)		
	1990	2000	2005
Wildfire	n.a	84%	78%
Planned fire	n.a	16%	22%

Notes:
1. Note: The figures for the reporting years 2000 and 2005 refer to the averages of annually affected areas for the periods 2001-2003 and 2003-2006 respectively (MIG 2008)

9.5 Comments to Table T9

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Area affected by fire	As indicated above, there is currently no nationally coordinated approach to the systematic mapping and reporting of the extent, seasonality and intensity of fires and whether they are planned or unplanned. The fire area data reported here differs from the areas used in the national greenhouse gas inventory. This is due to different definitions and categorisation of fire for estimating emissions of greenhouse gases due to fire for all lands and type of fire.	

Number of fires	As indicated above, there is currently no nationally coordinated approach to the systematic mapping and reporting of the number of fires and whether they are planned or unplanned.	
Wildfire / planned fire	Unplanned fire is defined as fire started naturally (such as by lightning), accidentally or deliberately (such as by arson) that is not in accordance with fire management prescriptions; the terms 'unplanned fire', 'bushfire' and 'wildfire' are used interchangeably. Planned fire is fire started in accordance with a fire management plan or some other type of planned burning program or bushfire-response procedure, such as fuel reduction (prescribed) burning.	

Other general comments to the table

10 Table T10 – Other disturbances affecting forest health and vitality

Data is not available for this reporting table.

- While Australia uses a national indicator for forest health and vitality, there is no nationally agreed methodology to report this information.
- Most state forest management agencies report impacts on forests of animal pests, insect pests, pathogens, weeds and other introduced biota, however, the methods for assessment vary between state and region.
- As a consequence, there has been no national compilation of these statistics and it is not considered appropriate to derive estimates from insufficient data for FRA Table T10.
- Drought affected large areas of Australia during the reporting period, with significant impacts on forest health in several regions. Drought contributed to a series of intense wildfires that affected large areas of forest in south-eastern Australia.
- Other processes or agents impacting on forest health include stream and salinity, soil acidity, drought and the impacts of river regulation.
- Predicted major changes in climate, including increased temperatures and lower moisture availability, could make forests more susceptible to pests, diseases, fire and other pressures. The productive capacity of the principal timber production forests (both native and plantation) could decline in the medium term.
- Several exotic organisms that pose a threat to Australian forests have moved closer to Australia's shores, increasing the importance of effective quarantine. The European house borer, which infests seasoned coniferous timber and can cause structural damage to houses, has been detected in Perth and steps have been taken to control its spread.
- Damage to forest ecosystems from most native insect pests and pathogens is usually widespread and of low severity. Occasional outbreaks and epidemics occur and the resultant damage can adversely affect commercial values, particularly in plantations.
- Chemical pest and disease control methods used in forest plantations are highly regulated, and the quantity of pesticides used is estimated to be less than 1% of the total Australian market.
- Factors affecting the health and vitality of Australia's native forests and plantations and consider the impacts of vertebrates, invertebrates, pathogens, weeds, drought, soil acidification, climate change and other potentially damaging agents. The active management of these agents in forests is directed principally towards protecting commercial values in multiple-use public and private native and planted forests and, in all forests, biodiversity and other forest values. Many pests and diseases, particularly native ones, show cyclical patterns of impact and are generally of minor concern.
- A number of case studies are provided in Australia's 2008 SOFR (MIG 2008).

10.1 FRA 2010 Categories and definitions

Term	Definition
Disturbance	Damage caused by any factor (biotic or abiotic) that adversely affects the vigour and productivity of the forest and which is not a direct result of human activities.

Invasive species	Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.
Category	**Definition**
Disturbance by insects	Disturbance caused by insect pests.
Disturbance by diseases	Disturbance caused by diseases attributable to pathogens, such as bacteria, fungi, phytoplasma or virus.
Disturbance by other biotic agents	Disturbance caused by biotic agents other than insects or diseases, such as wildlife browsing, grazing, physical damage by animals, etc.
Disturbance caused by abiotic factors	Disturbances caused by abiotic factors, such as air pollution, snow, storm, drought, etc.

10.2 National data

10.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html

11 Table T11 – Wood removals and value of removals

11.1 FRA 2010 Categories and definitions

Category	Definition
Industrial roundwood removals	The wood removed (volume of roundwood over bark) for production of goods and services other than energy production (woodfuel).
Woodfuel removals	The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.

11.2 National data

11.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
ABARE (2009) *Australian forest and wood product statistics.*	H	Wood product statistics	2008	

11.2.2 Original data

See section 11.3.2.

11.3 Analysis and processing of national data

11.3.1 Calibration

No calibration is undertaken.

11.3.2 Estimation and forecasting

Timber removals in '000 cubic metres

Year	Industrial Roundwood	Wood Fuel
1988	16,902	3,051
1989	16,584	3,298
1990	17,213	3,545
1991	16,604	3,787
1992	16,654	4,020
1993	17,659	4,251
1994	18,762	4,490
1995	19,560	4,742
1996	19,255	5,018
1997	20,077	5,298
1998	21,158	5,637
1999	20,838	5,974
2000	24,407	6,333
2001	24,474	6,707
2002	24,299	3,082
2003	25,821	3,092
2004	26,621	n.a.
2005	27,000	n.a.
2006	26,736	n.a.
2007	27,182	n.a.
2008	28,461	n.a.

Source: ABARE 2009

NOTES: Post 2003 ABARE data no longer includes estimation of woodfuel.

11.4 Data for Table T11

FRA 2010 Category	Industrial roundwood removals			Woodfuel removals		
	1990[2]	2000[3]	2005	1990[2]	2000[3]	2005
Total volume (1000 m^3 o.b.)	16,791	23,035	26,672	3,540	5,547	.n.a
... of which from forest	16,791	23,035	26,672	3,540	5,547	.n.a
Unit value (local currency / m^3 o.b.)[1]	.n.a	$51.38	$60.89	.n.a	.n.a	.n.a
Total value (1000 local currency)	.n.a	$1,254,000	$1,644,000	.n.a	.n.a	.n.a

Note:

1. Value of forest production has only been collected nationally since 1992-3 financial year.
2. Average of years 1988 – 1992
3. Average of years 1998 – 2002
4. Average of years 2003 - 2007

	1990	2000	2005
Name of local currency	Australian Dollar	Australian Dollar	Australian Dollar

11.5 Comments to Table T11

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Total volume of industrial roundwood removals	The figures for the reporting years refer to the averages for the 5-year periods 1988-1992, 1998-2002 and 2003-2007 respectively.	
Total volume of woodfuel removals	Woodfuel data post 2003 are unavailable.	
Unit value	Unit value averaged for the periods 1988–1992 and 1998–2002 and 2003–2007 respectively..	
Total value		

Other general comments to the table
• Value of forest production has only been collected nationally since 1992-3 financial year. • Values are at mill door or wharf. Forest figures will include wood harvested from OWL. • Australian financial year is July to June. Figures for 2000 are means for 1997-8 to 2001-2.

12 Table T12 – Non-wood forest products removals and value of removals

- Relevant reference - Data source: Pp 63 Indicator 2.1d and pp 140 Indicator 6.1d SOFR2008 (MIG 2008)
- National & jurisdictional data on the supply and demand of non-wood products are sparse.
- Use of non-wood forest products by indigenous communities is also significant in some areas. Products include: foods, medicinal products, materials for artworks, handicrafts, implements, dyes, ochres, pigments and fibres.
- The estimates for honey and apiary products are for commercial hives using exotic bees and do not necessarily all arise from forests
- Other known important commercial, non-wood forest products include game meat and animal skins from native species (kangaroos, wallabies and possum) and exotic species (deer, pigs, goats), bush foods (seeds, flowers and fruit used for food products or flavouring) tree seeds (for propagation of commercial and ornamental trees, shrubs and flowers).

12.1 FRA 2010 Categories and definitions

Term	Definition
Non-wood forest product (NWFP)	Goods derived from forests that are tangible and physical objects of biological origin other than wood.
Value of NWFP removals	For the purpose of this table, value is defined as the market value at the site of collection or forest border.

NWFP categories

Category
Plant products / raw material
1. Food
2. Fodder
3. Raw material for medicine and aromatic products
4. Raw material for colorants and dyes
5. Raw material for utensils, handicrafts & construction
6. Ornamental plants
7. Exudates
8. Other plant products
Animal products / raw material
9. Living animals
10. Hides, skins and trophies
11. Wild honey and bee-wax
12. Wild meat
13. Raw material for medicine
14. Raw material for colorants
15. Other edible animal products
16. Other non-edible animal products

12.2 National data

12.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). *Australia's State of the Forests Report 2008.* Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html

12.3 Analysis and processing of national data

12.3.1 Estimation and forecasting

Value of some of Australia's non-wood forest products (MIG 2008, Table 83 p. 130)

State	Kangaroo	Eucalyptus oil	Honey, beeswax,other apiary products	Hunting	Sandalwood oil	Whole plant harvests	Cut flowers (wild harvest)	Bark and wood for Indigenous art products	Grazing (including live export of cattle)	Crocodile eggs	Bushfood (e.g. *Acacia* seed, *Solanum centrale*)	
ACT	✓	x	x	x	x	x	x	[x]	✓	x	x	✓
NSW	✓	✓	✓	✓	x	✓	✓	✓	✓	x	x	✓
NT	x	x	x	✓	x	✓	x	✓	✓	✓	x	✓
Qld	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	x	✓
SA	✓	✓	✓	✓	x	✓	x	✓	✓	x	x	✓
Tas.	✓	✓	✓	✓	x	✓	✓	✓	✓	x	✓	✓
Vic.	✓	✓	✓	✓	x	✓	✓	✓	✓	x	x	✓
WA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Total value of industry ($ million)	240[1]	<1.5[2]	49	36[3]	27[4]	12[5]	7[6]	~4[7]	446.9[8]	1[9]	0.33[10]	0.6

Notes:

1. Total value of industry
2. Decline in recent years due to exports from China. Estimate based on farm gate value in 1991; retail value was estimated to be $5 million

3. Duck and quail shooting industry in Victoria; estimated value to the state economy
4. Predicted turnover of Mt Romance Australia (Kimberley region, Western Australia), 2005–06
5. Tree ferns exported from Tasmania to other states and overseas
6. 15% of WA export production, which was ~55% of Australian exports (value $85 million)
7. NT arts and crafts industry valued at ~ $5–6 million
8. Value estimate derived from value of live export of cattle, mainly from northern Australia
9. Derived from permit returns of eggs collected with a retail price of $50 per hatchling
10. For wild harvest of only three bush products
11. Cape York Peninsula 1992–97

12.3.2 Reclassification into FRA 2010 categories

12.4 Data for Table T12

Rank	Name of product	Key species	Unit	NWFP removals 2005		NWFP category
				Quantity	Value (1000 local currency)	
1st	Kangaroo				240,000	1
2nd	Honey/Beeswax				49,000	11
3rd	Hunting				36,000	10
4th	Sandalwood Oil				27,000	3
5th	Whole Plant Harvests				12,000	6
6th	Cut Flowers (wild harvest)				7,000	6
7th	Bark & Wood for Indigenous Art products				~4,000	5
8th	Eucalyptus Oil				< 1,500	3
9th	Seed Collection				600	8
10th	Bushfood				330	1
All other plant products					n.a.	
All other animal products					n.a.	
TOTAL					**377,430**	

	2005
Name of local currency	Australian Dollar

12.5 Comments to Table T12

Variable / category	Comments related to data, definitions, etc.
10 most important products	Estimates for some products are regional case study estimates rather than national estimates. See footnotes in input table. Kangaroo and honey are national figures. Grazing (including live export of cattle) was not included in the ranking as it was deemed not to be a NWFP for FRA reporting purposes.
Other plant products	
Other animal products	
Value by product	Based on information published in Australia's SOFR (MIG 2008) with values varying from 1994 to 2005-06.
Total value	

Other general comments to the table

- Data source: Table 83 p130 Indicator 6.1b SOFR2008
- Limited data are available for many non-wood forest product industries. The data provided give an estimate of the annual value of some industries and lists the states and territories where they are of significant size. Some of the estimates include products derived from landscapes other than forests.
- National & jurisdictional data on the supply, demand and value of non-wood products are sparse
- Use of non-wood forest products by indigenous communities is also significant in some areas. Products include: foods, medicinal products, materials for artworks, handicrafts, implements, dyes, ochres, pigments and fibres.
- The estimates for honey and apiary products are for commercial hives using exotic bees and do not necessarily all arise from forests
- Other known important commercial, non-wood forest products include game meat and animal skins from native species (kangaroos, wallabies and possum) and exotic species (deer, pigs, goats), bush foods (seeds, flowers and fruit used for food products or flavouring) tree seeds (for propagation of commercial and ornamental trees, shrubs and flowers.

13 Table T13 – Employment

13.1 FRA 2010 Categories and definitions

Category	Definition
Full-time equivalents (FTE)	A measurement equal to one person working full-time during a specified reference period.
Employment	Includes all persons in paid employment or self-employment.
Paid employment	Persons who during a specified reference period performed some work for wage or salary in cash or in kind.
Self-employment	Persons who during a specified reference period performed some work for profit or family gain in cash or in kind (e.g. employers, own-account workers, members of producers' cooperatives, contributing family workers).

13.2 National data

13.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Montreal Process Implementation Group (2008). Australia's State of the Forests Report 2008. Bureau of Rural Sciences, Canberra.	H	Forest • area • type • tenure • carbon • employment • fire • health • policy • education • management	1992 to 2007	This report is the most comprehensive report and national assessment of Australia's forests. SOFR 2008 was compiled from numerous spatial data sets captured between 2002 and 2007 and varying from very detailed 1:25,000 scale to broader 1:250,000 scale, and draws on data collated since 1992. http://adl.brs.gov.au/forestsaustralia/publications/sofr2008.html
Davidson J., Davey S., Singh S., Parsons M., Stokes B., Gerrand A. (2008). *The Changing Face of Australia's Forests,* Bureau of Rural Sciences, Canberra.	H	Forest Area, Forest Type	2008	This report summarises the major changes in forest use and management since the National Forestry Policy Statement was agreed in 1992. http://adl.brs.gov.au/forestsaustralia or http://www.affashop.gov.au/product.asp?prodid=13892
ABS (2002a). *Labour Force. Catalogue No. 6203.0*. Australian Bureau of Statistics: Canberra.	H	Employment in the forest sector	2002	
ABARE (2002a). *Australian Forest and Wood Product Statistics March/June 2002 Quarters.* Australian Bureau of Agricultural and Resource Economics, Canberra.	H	Employment in the forest sector	2002	
ABARE (2003). *Australian Commodity Statistics 2002*. Australian Bureau of Agricultural and Resource Economics, Canberra.	H		2002	
ABARE (2008) *Australian forest and wood product statistics. September and December quarters 2007.*	H	Employment in the forest sector	1997 2004	
ABARE (2000) *Australian forest*	H	Employment	1992	Table 58

and wood product statistics. June quarter 2000.		in the forest sector		

13.2.2 Classification and definitions

National class	Definition
Forestry and harvesting	Includes employees directly related to forestry and harvesting. Does not include truck drivers, managers or conservation staff.
Park ranger and forester employment	The terms forester and park ranger were defined by the individuals completing the census.

13.2.3 Original data

13.3 Analysis and processing of national data

13.3.1 Reclassification

FRA Class	National Reporting Class
Primary production of goods	• Forestry and logging 100%
Unspecified forestry activities	NDA

13.4 Data for Table T13

FRA 2010 Category	Employment (1000 years FTE)		
	1990	2000	2005
Employment in primary production of goods	11	13.5	11.3
...of which paid employment	n.a.	n.a.	n.a.
...of which self-employment	n.a.	n.a.	n.a.
Employment in management of protected areas	n.a.	n.a.	n.a.

13.5 Comments to Table T13

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Employment in primary production of goods	Figures relating to processing and manufacturing have not been included in Australia's response, as per the FAO FRA2010 guidelines.	
Paid employment / self-employment	Nationally consistent data are not available	
Employment in management of protected areas	Nationally consistent data are not available	

Other general comments to the table
Forestry, logging and wood-based manufacturing continue to provide significant employment including for people living in rural and regional Australia. Job losses in the native forest industries have been compensated by new opportunities in hardwood plantations, maturing pine plantations and wood-based manufacturing using increasing supplies of plantation wood (Davidson et al, 2008). See Australia's SOFR 2008 (MIG 2008) pp. 168-170.

14 Table T14 – Policy and legal framework

14.1 FRA 2010 Categories and definitions

Term	Definition
Forest policy	A set of orientations and principles of actions adopted by public authorities in harmony with national socio-economic and environmental policies in a given country to guide future decisions in relation to the management, use and conservation of forest and tree resources for the benefit of society.
Forest policy statement	A document that describes the objectives, priorities and means for implementation of the forest policy.
National forest programme (nfp)	A generic expression that refers to a wide range of approaches towards forest policy formulation, planning and implementation at national and sub-national levels. The national forest programme provides a framework and guidance for country-driven forest sector development with participation of all stakeholders and in consistence with policies of other sectors and international policies.
Law (Act or Code) on forest	A set of rules enacted by the legislative authority of a country regulating the access, management, conservation and use of forest resources.

14.2 Data for Table T14

Indicate the existence of the following (2008)			
Forest policy statement with national scope		X	Yes
			No
If Yes above, provide:	Year of endorsement	1992	
	Reference to document	Australia's National Forest Policy Statement	
National forest programme (nfp)		X	Yes
			No
If Yes above, provide:	Name of nfp in country	Regional Forest Agreements (10 nationally) and Plantations for Australia The 2020 Vision	
	Starting year	Range from 1997 to 2001	
	Current status		In formulation
		X	In implementation
			Under revision
			Process temporarily suspended
	Reference to document or web site	SOFR 2008 - MIG 2008, pp. xvi-xvii and 185-186; http://www.daff.gov.au/rfa ; SOFR 2008 - MIG 2008, p. 190; http://www.daff.gov.au/forestry/plantation-farm-forestry/2020	
Law (Act or Code) on forest with national scope			Yes, specific forest law exists
		X	Yes, but rules on forests are incorporated in other (broader) legislation
			No, forest issues are not regulated by national legislation
If Yes above, provide:	Year of enactment	1999 and 2002 (See Comments to table below)	
	Year of latest amendment	2006	
	Reference to document	SOFR 2008 - MIG 2008, p. 185-186	

In case the responsibility for forest policy- and/or forest law-making is decentralized, please indicate the existence of the following and explain in the comments below the table how the responsibility for forest policy- and law-making is organized in your country.		
Sub-national forest policy statements	X	Yes
		No
If Yes above, indicate the number of regions/states/provinces with forest policy statements	All 6 States & 2 Territories	
Sub-national Laws (Acts or Codes) on forest	X	Yes
		No
If Yes above, indicate the number of regions/states/provinces with Laws on forests	All 6 States & 2 Territories	

14.3 Comments to Table T14

Variable / category	Comments related to data, definitions, etc.
Forest policy statement with national scope	Australia's National Forest Policy Statement (NFPS) was released in 1992. Plantations for Australia: The 2020 Vision was released in 1997.
National forest programme (nfp)	Ten Regional Forest Agreements (RFAs) have been negotiated bilaterally between the Australian Government and four of the six state governments (New South Wales, Victoria, Western Australia and Tasmania). The Australian and Tasmanian governments are also party to the Tasmanian Community Forest Agreement, which complements the Tasmanian RFA. The protection provided by Australia's RFAs is given legal status through the national *Regional Forest Agreements Act 2002*. RFAs are 20-year plans for the conservation and sustainable management of Australia's native forests; they are designed to provide certainty for forest-based industries, forest-dependent communities and conservation. Plantations for Australia: The 2020 Vision is a strategic partnership between the Commonwealth, State and Territory Governments and the plantation timber growing and processing industries. The overarching principle of the Vision strategy is to enhance regional wealth creation and international competitiveness through a sustainable increase in Australia's plantations, based on a notional target of trebling the area of commercial tree crops to around 3 million hectares by 2020. The Vision was launched in 1997 and revised in 2002 by the Private Forestry Consultative Committee to take account of a number of developments.
Law (Act or Code) on forest with national scope	Australia is a federation of States and Territories. Under the constitution States and Territories are responsible for the management of natural resources including forests. Federal Acts which have a direct influence on the management of natural resources within States and Territories include; o *Regional Forest Agreements Act 2002* (RFA Act) o *Environment Protection and Biodiversity Act 1999* (EPBC Act)
Sub-national forest policy statements	Each State and Territory has some form of legislation and policy relating to the management of forest resources. Land and resource management activities in Australia operate within a framework of environmental laws and regulations, usually implemented at the state or territory level, where the primary responsibility for forest management lies. All states and territories have legislation designed to ensure the conservation and sustainable management of forests, some of which are administered by, and require coordination between, state and local governments, statutory authorities and regional management authorities.

Sub-national Laws (Acts or Codes) on forest	See comments to Law and Sub-national forest policy statements above. For examples refer to Australia's SOFR 2008 (MIG 2008) pp. 185-189

Other general comments to the table

15 Table T15 – Institutional framework

Australia is unable to provide nationally consistent information to complete all the tables in this section.

15.1 FRA 2010 Categories and definitions

Term	Definition
Minister responsible for forest policy-making	Minister holding the main responsibility for forest issues and the formulation of the forest policy.
Head of Forestry	The Head of Forestry is the Government Officer responsible for implementing the mandate of the public administration related to forests.
Level of subordination	Number of administrative levels between the Head of Forestry and the Minister.
University degree	Qualification provided by University after a minimum of 3 years of post secondary education.

15.2 Data for Table T15

Table 15a – Institutions

FRA 2010 Category	2008	
Minister responsible for forest policy formulation : please provide full title	Federal Minister for Agriculture, Fisheries & Forestry, and respective State and Territory Ministers	
Level of subordination of Head of Forestry within the Ministry		1st level subordination to Minister
		2nd level subordination to Minister
		3rd level subordination to Minister
	X	4th or lower level subordination to Minister
Other public forest agencies at national level	Australian Government Department of Water, Heritage and the Arts Australian Government Department of Climate Change Commonwealth Scientific and Industrial Research Organisation (CSIRO)	
Institution(s) responsible for forest law enforcement	State and Territory agencies with responsibility for forest management. The arrangements differ in each jurisdiction.	

Table 15b – Human resources

FRA 2010 Category	Human resources within public forest institutions					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Total staff	**n. a.**	**n. a.**	**n. a.**	**n. a.**	**n. a.**	**n. a.**
...of which with university degree or equivalent	**n. a.**	**n. a.**	**n. a.**	**n. a.**	**n. a.**	**n. a.**

Notes:
1. Includes human resources within public forest institutions at sub-national level
2. Excludes people employed in State-owned enterprises, education and research, as well as temporary / seasonal workers.

15.3 Comments to Table T15

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Minister responsible for forest policy formulation		
Level of subordination of Head of Forestry within the Ministry	The State and Territory level subordination varies from first to third level.	
Other public forest agencies at national level		
Institution(s) responsible for forest law enforcement		
Human resources within public forest institutions	Data are not compiled nationally.	

Other general comments to the table

16 Table T16 – Education and research

Australia is unable to provide nationally consistent information to complete the T16 tables.

16.1 FRA 2010 Categories and definitions

Term	Definition
Forest-related education	Post-secondary education programme with focus on forests and related subjects.
Doctor's degree (PhD)	University (or equivalent) education with a total duration of about 8 years.
Master's degree (MSc) or equivalent	University (or equivalent) education with a total duration of about five years.
Bachelor's degree (BSc) or equivalent	University (or equivalent) education with a duration of about three years.
Technician certificate or diploma	Qualification issued from a technical education institution consisting of 1 to 3 years post secondary education.
Publicly funded forest research centers	Research centers primarily implementing research programmes on forest matters. Funding is mainly public or channelled through public institutions.

16.2 National data

16.2.1 Data sources

References to sources of information	Quality (H/M/L)	Variable(s)	Year(s)	Additional comments
Davidson J., Davey S., Singh S., Parsons M., Stokes B., Gerrand A. (2008). *The Changing Face of Australia's Forests,* Bureau of Rural Sciences, Canberra.	H	Forest Area, Forest Type	2008	This report summarises the major changes in forest use and management since the National Forestry Policy Statement was agreed in 1992. http://adl.brs.gov.au/forestsaustralia or http://www.affashop.gov.au/product.asp?prodid=13892

16.2.2 Original data

None

16.3 Analysis and processing of national data

16.3.1 Estimation and forecasting

16.4 Data for Table T16

FRA 2010 Category	Graduation [1] of students in forest-related education					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Master's degree (MSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	n.a.	n.a.	30	n.a.
Forest technician certificate / diploma	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
FRA 2010 Category	**Professionals working in publicly funded forest research centres [2]**					
	2000		2005		2008	
	Number	%Female	Number	%Female	Number	%Female
Doctor's degree (PhD)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Master's degree (MSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Bachelor's degree (BSc) or equivalent	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Notes:

1. Graduation refers to the number of students that have successfully completed a Bachelor's or higher degree or achieved a certificate or diploma as forest technician.
2. Covers degrees in all sciences, not only forestry.

16.5 Comments to Table T16

Variable / category	Comments related to data, definitions, etc.	Comments on the reported trend
Graduation of students in forest-related education		
Professionals working in public forest research centres		

Other general comments to the table

Australia is unable to provide nationally consistent information to complete the T16 tables. However, from a report released in 2008 (Davidson et. al, 2008), the qualifications needed to acquire a position in forest management have become broader, covering skills such as conservation management, forest law, biodiversity, stakeholder involvement, forest operations and economics. Prior to 1990, the Australian National University and the University of Melbourne were the only two tertiary institutions offering forestry education. By 1997, however, institutions offering relevant degrees included Southern Cross University, the Australian National University, the University of Melbourne, the University of Queensland, the Curtin University of Technology, the University of Tasmania, Monash University, Griffith University, the University of Western Australia, the University of Ballarat, the University of New England and Deakin University.

Notwithstanding this increase, the number of graduating forestry professionals has declined over time, from **125 in 1989–90** to about **30 per year in 2008**. Given the diversity of opportunities for forestry graduates, including in conservation, land management, consulting and international work, total demand for graduates probably exceeds 75 per year.

Employers in Australia's forest-growing and management sub-sectors have identified the lack of professional foresters as the most serious component of their skills shortage. To compensate, many have been recruiting entry-level foresters from abroad, drawing around 20% of their 2005–6 recruitment from this source. The forestry and forest industry sectors are expected to require at least 50 graduates per year in the future.

17 Table T17 – Public revenue collection and expenditure

Data is not available for this reporting table.

Other general comments to the table
Australia is unable to provide nationally consistent information to complete the tables in this section