

Criterion 7

Legal, institutional and economic framework for forest conservation and sustainable management

The five indicators in this criterion report on the extent to which the legal, institutional and economic framework supports sustainable forest management, as well as the capacity to monitor change and to conduct and apply research and development.

Key findings

Legal, institutional and economic framework

- A comprehensive legal, institutional and economic framework designed to achieve the conservation and sustainable management of forests is in place at the state, territory and national levels. Over the reporting period, jurisdictions strengthened this framework through the continued implementation of regional forest agreements (RFAs) and new measures governing vegetation clearing and the allocation of water to land uses such as forestry. Several jurisdictions also passed legislation to provide property rights for carbon sequestered by forests and other vegetation.
- There has been rapid growth in forest certification as a means of verifying the quality of forest management and maintaining access to markets, with more than 9 million hectares of native forest and plantations certified under the Australian Forest Certification Scheme and the Forest Stewardship Council at September 2007. In addition, most multiple-use public forests and some private forests are now managed in accordance with codes of forest practice and externally accredited environmental management systems, which provide a structured approach to the planning and implementation of measures to protect the environment.

- Tariffs on imported forest products are in the range from zero to 5%; goods imported from all least-developed countries have been tariff and quota-free since July 2003.
- Several billion dollars of private investment in wood processing infrastructure was announced by investors between 2001–02 and 2005–06, including proposals for two new pulp mills. National taxation arrangements for plantation-based managed investment schemes contributed to significant increases in Australia's plantation base.
- Governments are developing market-based mechanisms and incentives to promote reforestation and improved forest management as a way of protecting catchment values, particularly in agricultural landscapes.
- Six environmental assets have been added to national and sector balance sheets, including native standing timber available for harvest and plantation timber. The value of those two assets grew at average annual rates of 5.6% and 3.8%, respectively, over the period from 1997 to 2005.

Capacity to measure and monitor changes

- The capacity to report trends, while still variable, is generally much improved since 2003. Data are comprehensive in coverage, currency and frequency for 15 indicators and more limited for 25 indicators. Case studies and other narrative material provide a large part of the information for four indicators. Jurisdictions have improved the coordination of forest reporting, including through the Montreal Process Implementation Group for Australia.

- The ability to report on forest change varies considerably by tenure. The best information is available for multiple-use public forests, for which governments require forest-management reporting. The biggest data gaps remain for leasehold and private forests.

Capacity to conduct and implement research and development

- Australian, state and territory forest agencies have developed the following national critical research priorities: the impact of climate change on forest management; the role of forests in managing Australia's water resources; managing Australia's forests for multiple objectives; forest health and biosecurity; and forest products.
- Forest and Wood Products Australia provides a nationally coordinated investment approach to forestry industry research and development and has been given a stronger role in marketing and promotional services. It works with national, state and territory research providers. Governments are also investing in research and development through a variety of specific-purpose packages.



Pine plantation, ForestrySA's Kuitpo Forest Reserve, certified under the Australian Forest Certification Scheme.

Indicator 7.1a

Extent to which the legal framework supports the conservation and sustainable management of forests

Rationale

This indicator outlines the support that the legal system gives to the sustainable management of forests. A legal system that ensures transparency and public participation in policy- and decision-making supports continuous improvements in sustainable forest management.

Key points

- A comprehensive legal framework designed to achieve the conservation and sustainable management of forests is in place at the national, state and territory levels.
- Over the reporting period, jurisdictions strengthened this legal framework through the continued implementation of regional forest agreements (RFAs) and new measures governing vegetation clearing and the allocation of water to land uses such as forestry.
- Several jurisdictions also passed legislation to provide property rights for carbon sequestered by forests and other vegetation.

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. Table 107 shows that in New South Wales, South Australia, Tasmania, Victoria and Western Australia, comprehensive legislative provisions govern forest management planning and review, public participation, Indigenous participation, and the regulation of forest clearing in multiple-use public forests, public nature conservation reserves and private forests.

Table 108 shows examples of forest conservation and management-related legislation enacted in the same states in the period from 2002 to 2006. For example, Victoria's

Sustainable Forests (Timber) Act 2004 provides a framework for sustainable forest management and sustainable timber harvesting in that state's multiple-use public forests.

National and state forest agreements

National policy development plays a key role in promoting the conservation and sustainable management of forests. A key element of the approach adopted in the 1992 National Forest Policy Statement (Indicator 7.1b) involved the negotiation of RFAs between the Australian Government and some state governments. 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. They use a science-based methodology to determine forest allocation for different uses and forest management strategies, and are the result of substantial scientific study, consultation and negotiation covering a diverse range of interests.

A total of 10 RFAs have been negotiated bilaterally between the Australian Government and four of the six state governments (New South Wales, Victoria, Western Australia and Tasmania; Figure 1 in the Introduction). The Australian and Tasmanian governments are also party to the Tasmanian Community Forest Agreement, which complements the Tasmanian RFA. The protection provided by RFAs is given legal status through the national *Regional Forest Agreements Act 2002*. The Australian and Queensland governments completed a comprehensive regional assessment for southeast Queensland but did not sign an RFA. Queensland has initiated its own process, known as the Southeast Queensland Forest Agreement.

The RFAs include provisions to establish comprehensive, adequate and representative ('CAR') reserve systems. Overall, the aim was to place in nature conservation reserves

15% of the pre-1750 distribution of each forest type, 60% of the existing distribution of each forest type if vulnerable, 60% of existing old-growth forest, 90% or more of high-quality wilderness forests, and all remaining occurrences of rare and endangered forest ecosystems (including rare old-growth forests).

Some jurisdictions have passed legislation providing further protection for additional areas of forests. For example, New South Wales enacted the *Brigalow and Nandewar Community Conservation Area Act 2005*.

Environment Protection and Biodiversity Conservation Act

Australia's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to matters of national environmental significance, such as World Heritage properties and Natural Heritage places, wetlands of international importance, nationally listed threatened species and ecological communities, internationally listed migratory species, and Commonwealth marine areas.

The Act came into force in July 2000 and was amended in December 2006. The comprehensive assessments undertaken as part of the RFA process mean that RFAs are regarded as providing an equivalent level of protection to that provided by the EPBC Act. Therefore forestry operations undertaken in RFA areas do not require approval under the Act.

Codes of forest practice

Jurisdictions continue to improve codes of forest practice for use by forest managers, contractors and operators in multiple-use public forest and, in some jurisdictions, private forest. Most of the more recently developed or revised state-wide codes include a public consultation stage, and some (such as those in Tasmania and Victoria) incorporate processes to ensure independent scientific and technical review at 5–7-year intervals. Codes cover a range of issues, such as forest planning; forest access and roading; forest harvesting; the conservation of non-wood values; pest, weed and fire management; and the harvesting of non-wood products.

Table 107: Examples of new legislation, 2002 to 2006, by jurisdiction

Jurisdiction	New legislation	Purpose
NSW	National Parks and Wildlife Regulations 2002	Conserves nature, including threatened species; conserves objects, places and features of cultural value; and fosters public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation.
	<i>National Park Estate (Reservations) Acts 2002, 2003, 2005, 2006</i>	An Act to transfer state forest land to the national park estate, and for other purposes.
	<i>Brigalow and Nandewar Community Conservation Area Act 2005</i>	An Act to establish and provide for the management of the Brigalow and Nandewar Community Conservation Area.
	<i>Native Vegetation Management Act 2003</i>	Addresses the management and protection of native vegetation.
Qld	<i>Vegetation Management and Other Legislation Amendment Act 2004</i>	Protects all threatened and 'of concern' remnant native vegetation from clearing and phases out the broadscale clearing of less-threatened remnant vegetation.
SA	<i>Fire and Emergency Services Act 2005</i> (replaces the <i>Country Fires Act 1989</i>)	Provides for a country fire service to provide for the control and suppression of fires.
	<i>Natural Resource Management Act 2004</i>	Promotes the sustainable and integrated management of the state's natural resources and makes provision for their protection.
Tas.	<i>Nature Conservation Act 2002</i>	Provides for the declaration of certain types of reserves and sets out the values and purposes of each reserve class.
	<i>National Parks and Reserves Management Act 2002</i>	Reserves are managed under the Act according to management objectives for each reserve class.
Vic.	<i>Sustainable Forests (Timber) Act 2004</i>	Provides a framework for sustainable forest management and sustainable timber harvesting in multiple-use public forest.
	<i>Victorian Plantations Corporation Act 2003</i>	Establishes the Victorian Plantations Corporation to manage state plantations and to require that timber harvesting complies with a code of practice.
WA	<i>Carbon Rights Act 2003</i>	Provides for the creation of certain interests in land in relation to the effects of carbon sequestration from, and carbon release to, the atmosphere, and for related matters.
	<i>Tree Plantation Agreements Act 2003</i>	Enables the ownership of planted trees as an interest in land, separate from ownership of the land itself.

Sources: State agencies

Codes of forest practice vary in their legal status and coverage. Codes in New South Wales, Tasmania and Victoria are prescribed in legislation and cover public and private native and plantation forests. In the Australian Capital Territory, Queensland and Western Australia, the codes are prescribed at the agency level.

Table 108 shows the planning frameworks and codes of practice in place for plantations in various jurisdictions. For example, in South Australia the forest industry adopted industry-endorsed guidelines for best practice forest management (*Environmental Management Guidelines for Plantation Forestry in South Australia*) in 1997. Two major projects are under way to develop new statewide codes of forest practice: one to cover all plantations in New South Wales and another to cover all plantations in Queensland.

In the Northern Territory, private forest harvesting is governed by licences, which prescribe certain management requirements in a manner similar to a code of forest practice. In 2007, New South Wales published four regional private native forest codes of practice: for southern New South Wales, northern New South Wales, river red gum forests, and cypress and western hardwood forests. In some states, specific codes of practice also exist for fire management and some other activities. Several public forest-related agencies and private companies have adopted environmental management systems (described in more detail in Indicator 7.1b) that, in many cases, perform some of the functions of or are complementary to codes of forest practice.

Land clearing

All jurisdictions have committed to the national goal of increasing the extent and condition of native forests and have enacted legislation to curtail and/or strengthen controls on the broadscale clearing of native vegetation. Over the reporting period, New South Wales and Queensland enacted legislation to limit the clearing of forests and other native vegetation. In New South Wales, the *Native Vegetation Act 2003* and Native Vegetation Regulation 2005 require landholders to negotiate property vegetation plans with one of 13 regional catchment management authorities set up under the *Catchment Authorities Act 2003*.

The *Native Vegetation Act 2003* is designed to:

- provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the state
- prevent broadscale clearing unless it improves or maintains environmental outcomes
- protect native vegetation of high conservation value
- improve the condition of existing native vegetation
- encourage revegetation and rehabilitation with appropriate native vegetation.

In Queensland, the clearing of native vegetation is regulated by the *Vegetation Management Act 1999*. The purpose of the Act is to conserve remnant 'endangered', 'of concern' and 'not of concern' regional ecosystems and declared areas, to ensure

Table 108: Plantation-related planning framework and codes of practice

Jurisdiction	Status of planning frameworks and codes of forest practice relevant to plantations
NSW	The <i>Plantations and Reafforestation Act 1999</i> and the Plantations and Reafforestation (Code) Regulation 2001 replaced the <i>Timber Plantations Harvest Guarantee Act 1995</i> . The Act and code streamline the approval process and are aimed at increasing investment security for growers while maintaining environmental standards. In 2005, a review found that the objects of the legislation were still relevant and that the terms of the Act were delivering the desired results. A report on the review was tabled in Parliament in December 2005.
NT	Planning approvals for plantations are centrally controlled under the <i>Planning Act 2005</i> . The Northern Territory Department of Business, Industry and Resource Development has developed an approved <i>Code of Practice for Plantation Forestry</i> .
Qld	The <i>Integrated Planning Act 1997</i> provides the planning framework for plantation establishment in Queensland. Queensland is drafting a code of forest practice that guides or regulates plantation development on private land.
SA	Local government councils require a development application to be submitted for approval before plantation development. <i>Guidelines for Establishing and Managing Commercial Forest Plantations in South Australia</i> (1998) and <i>Environmental Management Guidelines for Plantation Forestry in South Australia</i> (1997) have been developed in consultation with industry, local governments and a range of planning and land management authorities.
Tas.	The <i>Forest Practices Act 1985</i> is administered by the Forest Practices Authority. The <i>Forest Practices Code</i> operates under the Act.
Vic.	The <i>Planning and Environment Act 1987</i> provides the legislative mechanism for plantations on private land and offers a streamlined approach to the plantation development approval process in Victoria. The Act establishes a <i>Code of Forest Practice for Timber Production</i> , which has recently been reviewed. On private land, the code is regulated by local government.
WA	The <i>Planning and Development Act 2005</i> enables local government to prepare planning schemes that define land-use zones. Permits are required from local government to establish tree plantations in most areas. The <i>Tree Plantation Agreements Act 2003</i> enables the ownership of planted trees as an interest in land, separate from ownership of the land itself. The <i>Code of Practice for Timber Plantations in Western Australia</i> provides a set of voluntary guidelines for plantation developers relating to plantation development and management. The code was released in September 2006.

Source: Commonwealth of Australia (2002)

that clearing does not cause land degradation, to prevent the loss of biodiversity, to maintain ecological processes, to manage the environmental effects of clearing, and to reduce greenhouse gas emissions. The Act regulates the clearing of remnant vegetation on freehold land and the clearing of remnant and some non-remnant vegetation on state tenures. Broad-scale clearing of remnant native vegetation ceased on 31 December 2006; however, clearing for defined relevant purposes may be allowed subject to permit.

Carbon

The issue of property rights for sequestered carbon is receiving considerable attention at the state level. New South Wales, South Australia, Tasmania, Western Australia and Victoria all now have specific legislation recognising the right to own carbon sequestered by vegetation on freehold land, although the name given to this right varies between states. In South Australia, for example, the *Forest Property (Carbon Rights) Amendment Act 2006* provides for the separation of ownership of land, forest vegetation and carbon rights for improved investment security and transferability; the amendments came into effect in July 2007. Developments in carbon trading are discussed in Indicator 6.1c.

Water

In June 2004, the Australian Government and all state and territory governments, except Tasmania and Western Australia, signed the National Water Initiative, a strategy to improve water management nationwide (Tasmania signed in June 2005 and Western Australia in April 2006). The initiative builds on the previous Council of Australian Governments framework for water reform signed by the Australian Government and all state and territory governments in 1994. It encompasses a wide range of water management issues and encourages best-practice

approaches to the management of water in Australia. The National Water Initiative includes measures such as:

- regional assessments of the level of water intercepted by land-use change activities and a requirement that new activities likely to intercept significant volumes of water hold a water access entitlement if the catchment is at, or close to, its sustainable level of water allocation
- investment in water recovery for six significant ecological assets, such as the Barmah–Millewa Forest along the Murray River.

Public participation

Australia has well-established practices for public participation. The environmental impact and planning laws of the Australian, state and territory governments contain various requirements for public consultation, and the National Forest Policy Statement calls for public consultation in forest planning. In some jurisdictions, there are also avenues for public involvement in the management of forests on privately owned or leasehold land through planning laws administered by local governments.

In all states and territories, public consultation and participation processes for publicly managed forests extend to the level of management planning. They include the provision of information on resources, impacts, uses and values; discussion papers on alternative plans; invitations to provide comment or written submissions; and discussion forums and public meetings.

Table 109 shows the coverage of ecologically sustainable forest management in the legislative frameworks of New South Wales, South Australia, Tasmania, Victoria and Western Australia, including provisions for public participation.

Table 109: Coverage of ecologically sustainable forest management provisions in legislative frameworks, by jurisdiction and tenure

Tenure	NSW			SA			Tas.			Vic.			WA		
	MUF	NCR	PRIV	MUF	NCR	PRIV	MUF	NCR	PRIV	MUF	NCR	PRIV	MUF	NCR	PRIV
Forest management planning and review ^a	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	n.d.
Public participation	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	P	Y	Y	n.d.
Indigenous participation	Y	Y	n.d.	Y	Y	Y	Y	Y	N	Y	Y	N	N	N	n.d.
Regulation of forest clearing	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	n.d.	Y

MUF = multiple-use public forest; N = limited or no legislation exists; n.d. = insufficient data; NCR = public nature conservation reserve; P = legislation or mechanisms exist but do not cover all aspects or are limited in their application; PRIV = private forest; Y = legislation is comprehensive for most aspects

^a Components include accountable management body, dispute resolution process, forest management planning, management review, planning for environmental values, planning review, policy review, property rights and periodic assessment of forest-related resources.

Note: No data available for the Australian Capital Territory, the Northern Territory or Queensland.

Sources: State agencies

Indigenous people's property rights

The Australian Government enacted the *Native Title Act 1993* and established the Indigenous Land Corporation in 1995 to purchase land for Indigenous groups displaced from their lands. States and territories subsequently passed complementary native title legislation. The *Regional Forest Agreements Act 2002* specifies that agreements between the state and Australian governments about the management of forests must include the protection of Indigenous heritage values.

There is a growing trend in some parts of Australia to settle native title claims over national parks by agreement, which may give rise to a consent determination in the Federal Court that includes the recognition of such rights. The agreement may also address how those rights may be exercised, including whether or not firearms may be used in the determination area. The agreement may also put in place 'joint management' arrangements.

References and further reading

Commonwealth of Australia (1992, 2002, 2005b),
Forestry Tasmania (2007) (list at the back of the report).



Field days are opportunities for growers to observe the application of new technologies and practices.



The red gum forests of the Barmah region are a significant ecological asset on the Murray River. Their good health relies on an adequate allocation of water to environmental flows in a highly regulated river system.

Indicator 7.1b

Extent to which the institutional framework supports the conservation and sustainable management of forests

Rationale

This indicator examines the institutional frameworks that support sustainable forest management. Institutional frameworks provide mechanisms for the engagement of the wider community in the process of continuous improvement and sustainable management of forests.

Key points

- Australia has a well-established institutional framework to support the conservation and sustainable management of forests.
- There has been rapid growth in forest certification as a means of verifying the quality of forest management. More than 9 million hectares of native forest and plantations were certified under the Australian Forest Certification Scheme and the Forest Stewardship Council by September 2007.
- Most multiple-use public forests and some private forests are now managed in accordance with codes of forest practice and externally accredited environmental management systems, which provide a structured approach to the planning and implementation of environmental protection measures.
- Governments have responded to a skills shortage by supporting programs to further develop human resources in the sector.

Policy framework

The management of Australia's forests is guided by the National Forest Policy Statement,¹ which was signed by the Australian Government and all mainland state and territory governments in December 1992 and by the Tasmanian Government in April 1995. Through the policy statement and other mechanisms, the Australian, state and territory governments are committed to the sustainable management of all Australian forests, whether the forest is on public or private land or within conservation reserves or production forests.

A number of other policies and programs have been established nationally by governments through ministerial council decisions, established by bilateral arrangements between the Australian Government and a state or territory government, endorsed by the Australian Government, or introduced by an individual state or territory government. Examples for each of these categories include the following:

- **Ministerial Council decisions.** Plantations for Australia: the 2020 Vision is a partnership involving the Australian Government and state and territory governments and the plantation timber growing and processing industry. It aims to treble Australia's plantation area from 1 million hectares in 1997 to 3 million hectares by 2020.
- **Bilateral arrangements.** Through the Tasmanian Community Forest Agreement, which was signed in May 2005, the Australian and Tasmanian governments committed to a comprehensive program of conservation, silvicultural improvement, tourism, industry development and other measures designed to enhance the sustainability and competitiveness of Tasmanian forests and forest industries.
- **Australian Government initiatives.** The National Indigenous Forestry Strategy, endorsed by the Australian Government, is being implemented in conjunction

¹ Commonwealth of Australia (1992).

with corresponding state and territory strategies and programs. It aims to contribute to the overall sustainable development of Indigenous land and communities, and addresses areas such as natural resource management, business development, cultural heritage, education, employment and training.

- **State and territory government initiatives.** The Victorian Government's Our Forests, Our Future policy, announced in February 2002, aims to ensure the sustainable future of Victoria's native forests and the timber industry communities they support.

Table 110 shows some state-level policy provisions for aspects of forest management, by tenure, for New South Wales, South Australia, Tasmania, Victoria and Western Australia.

Regional assessment and policy review

The level of regional assessment and policy review varies according to the type and tenure of forest.

For public forest land, all jurisdictions in Australia undertake planning, assessment and policy reviews. The Primary Industries Ministerial Council, the Natural Resource Management Ministerial Council, the Forestry and Forest Products Committee and the Natural Resource Policies and Programs Committee coordinate policy and planning across jurisdictions. The Forestry and Forest Products Committee provides the major forum for agencies to consider national forest policy issues.

Ten regional forest agreements (RFAs) (Indicator 7.1a) covering almost all Australia's major native timber production forests were signed by the Australian and relevant state governments between 1997 and 2001. By signing the RFAs, the states agreed to join the Australian Government in periodic reviews of the implementation and progress of the agreements. Tasmania conducted a 5-year review in 2002 and began a 10-year review in mid-2006 that was due for completion in November 2007. In mid 2007, Western Australia agreed to undertake its five-year review. Discussions have begun between the Australian Government and the governments of Victoria and New South Wales to begin reviews in those states. All jurisdictions except the Northern Territory have formal requirements for the periodic review of planning in public forested lands. Park management policies are also reviewed regularly for conservation lands. For example, in New South Wales, park management policy is reviewed every five years. Fire management plans are prepared jointly by forest agencies, conservation agencies and rural fire services in most jurisdictions.

Landowners make plans for their forested land consistent with management objectives, often as part of overall farm plans, and local communities or regional organisations are required to develop regional vegetation management plans. Community approaches to planning are fostered in the Landcare movement and in some cases through private forestry development committees or similar bodies. Private corporations make detailed plans for their own plantations.

Community awareness

Australian governments are committed to public participation in forest management, extension activities and the provision of information. All states and territories have forest extension and education programs (Case studies 59, 60 and 61) and all public forest management agencies publish forest-related information such as annual reports and technical papers on research and other matters of interest. The Australian Government coordinates both the national *State of the Forests Report* and the national *State of the Environment Report*. Some states publish their own state-specific versions of those reports.

Human resource skills

A range of training and education facilities exist for the teaching of all aspects of forest management, offering graduate and postgraduate degrees, diploma and certificate courses, and operational competency certificates. In 2006, the Australian Government funded the *Wood and Paper Products Industry Skills Shortage Audit*, a report by the National Association of Forest Industries in conjunction with the Australian Plantation Products and Paper Industry Council. The report made a number of recommendations directed at industry, government, universities and research organisations; progress is being made towards implementing some of the report's recommendations.

One key area of concern relates to a shortage of professional foresters (Case study 62 on the SOFR website). As the jurisdiction with responsibility for university education, the Australian Government pledged \$1.6 million in 2007 to help deliver the National Forestry Masters Program offered jointly by the Australian National University, Southern Cross University, the University of Melbourne, University of Queensland and the University of Tasmania. The curriculum for the new program, which will be developed and implemented jointly, is designed to make it easier for students and staff to move between institutions. The collaborating universities are also the principal research training partners in the Cooperative Research Centre for Forestry, ensuring strong links to research on nationally identified priorities. The Australian Government has also committed \$4 million towards improving training and skills development in Tasmania as part of the Tasmanian Community Forest Agreement, and provided significant funding for skills and training development as part of the National Indigenous Forestry Strategy.

Enforcement

States and territories use a range of measures to monitor compliance with legislation and to investigate breaches (Case study 63 on the SOFR website for the Tasmanian approach). In general, enforcement officers, regionally based specialist staff and legally constituted bodies such as tribunals are charged with ensuring compliance with forest and forestry legislation.

Generally, compliance is high with the law, regulations and guidelines relating to timber harvesting in multiple-use public forests. For example, Forests NSW has introduced a four-tier audit system to monitor compliance both with regulatory and with non-regulatory conditions in forest operations. In the first tier, the supervising foreman audits compliance with harvesting plan conditions and uses harvesting inspection reports to document compliance and breach reports. In 2005–06, just over 120,000 compliance checks in the state’s multiple-use public forests resulted in 1,142 non-compliance incidents and, ultimately, four fines issued to Forests NSW by regulatory agencies.

In all jurisdictions, the monitoring of recreational use on public lands and harvesting on private lands is generally less extensive.

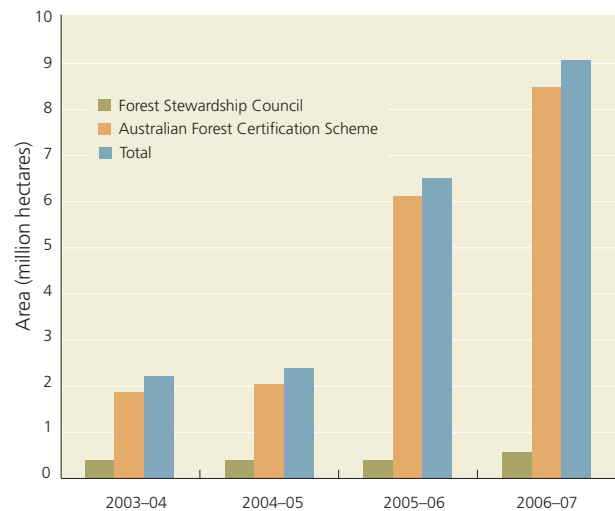
Certification

Consumers, governments and enterprises around the world are increasingly seeking assurance that the forest and wood products they buy are sourced from legally harvested and sustainably managed forests. This requirement is being met progressively through forest certification, which is the voluntary, independent assessment of forest management activities and operations undertaken in a particular area of forest. Certification schemes typically require forest management practices that are more stringent than provided for by law alone, and encourage forest managers to display their sustainability credentials when marketing their products. The certification of a forest area is carried out by an accredited organisation against standards set out by one of several existing certification schemes.

Two major forest certification schemes operate in Australia – the Australian Forest Certification Scheme (AFCS) and the scheme operated by the Forest Stewardship Council (FSC). Both have a forest management standard and a chain-of-custody standard (which certifies that a product came from a particular forest area). The AFCS uses the Australian Forestry Standard,² which was developed through an extensive process involving representatives of the Australian community, industry and government and based on international frameworks such as the International Organization for Standardization’s ISO 14000 environmental management standards and the Montreal Process criteria and indicators. While the AFCS is currently the only scheme certifying native forest in Australia, the FSC has committed to developing a national standard that will encompass all forest types, including native forest.

Figure 95 shows that forest certification has grown rapidly since 2003. 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 FSC.

Figure 95: Forest certified in Australia, 2003–04 to 2006–07



Source: Department of Agriculture, Fisheries and Forestry

In addition to forest certification, most multiple-use public forests and some private forests are managed in accordance with codes of forest practice (Indicator 7.1a) as well as environmental management systems (EMSs) externally certified to an ISO standard. An EMS is a tool for managing the impacts of an organisation’s activities on the environment and provides a structured approach to the planning and implementation of environmental protection measures. Forest management agencies with a certified EMS in place include Forests NSW; ForestrySA; Queensland’s Department of Natural Resources and Water (Forest Products) and Forestry Plantations Queensland; Western Australia’s Forest Products Commission; Victoria’s Department of Sustainability and Environment; and Forestry Tasmania. Several major private forestry companies also have EMSs in place.

Illegal logging

Illegal logging is widely regarded as a serious threat to the sustainable management of the world’s forests, imposing substantial environmental, economic and social costs on countries where it occurs. The Australian Government strongly opposes illegal logging and the importation of illegally sourced forest products. However, verifying the legality of forest product imports is extremely difficult, partly because of a lack of information on forest law enforcement in many countries and partly because of the complexity of the supply chains that link producers and consumers.

The Australian Government released a discussion paper on illegal logging for public comment in November 2006 to illuminate the issues associated with illegal logging and to explore options for reducing the volume of illegally sourced forest products imported into Australia. An Australian Government policy on illegal logging was released in 2007.

² The AFS was recognised by Standards Australia as an Australian Standard® on 5 August 2007 and has been designated as AS 4708 2007 The Australian Forestry Standard.

Table 110: Coverage of aspects of forest management in non-legislative policy frameworks, by jurisdiction and tenure

Tenure	NSW			SA			Tas.			Vic.			WA		
	MUF	NCR	PRIV	MUF	NCR	PRIV	MUF	NCR	PRIV	MUF	NCR	PRIV	MUF	NCR	PRIV
Forest management planning and review	Y	Y	n.d.	Y	Y	N	Y	Y	P	Y	Y	Y	Y	Y	n.d.
Public participation	Y	Y	n.d.	Y	Y	N	Y	Y	P	Y	Y	n.d.	Y	Y	n.d.
Indigenous participation	Y	Y	n.d.	Y	Y	Y	P	P	N	Y	Y	n.d.	Y	Y	n.d.
Regulation of forest clearing	Y	Y	n.d.	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y

MUF = multiple-use public forest; N = limited or no policies exist; n.d. = insufficient data; NCR = nature conservation reserve; P = policies exist but do not cover all aspects or are limited in their application; PRIV = private forest; Y = policies are comprehensive for most aspects

Note: No data available for the Australian Capital Territory, the Northern Territory or Queensland.

Sources: State agencies

References and further reading

Commonwealth of Australia (1992, 2002, 2005c, 2006, 2007), Crawford (2006), Department of Natural Resources and Environment (2002), Forestry Tasmania (2007), National Association of Forest Industries and the Australian Plantation Products and Paper Industry Council (2006) (list at the back of the report).

Web resources

Case study 60: Forest education and awareness in Western Australia

Case study 61: Forest education and awareness in New South Wales

Case study 62: Forestry skills in the Green Triangle

Case study 63: Tasmania's Forest Practices Authority

Information on the Tasmanian Community Forest Agreement is available at www.daff.gov.au/forestry/national/cfa

Information on the Australian Government's policy on illegal logging is available at www.daff.gov.au/forestry/international/illegal-logging



Mini-rangers participating in a school holiday trekking program.

Case study 59: Forest education and awareness in South Australia

The South Australian Government supports programs to develop and deliver forestry education and awareness, principally through the Department of Primary Industries and Resources SA (PIRSA) Forestry and ForestrySA.

About 8,000 schoolchildren visit South Australian public forest reserves each year for outdoor and forestry education purposes, mostly by arrangement with forestry staff. Rangers are available to host tours and to work with teachers in giving talks and assisting with other forest education activities. A dedicated forest education centre has been developed to support some visits.

PIRSA Forestry produces *Forestry Matters!*, a periodically updated, forest education resource about the plantation-based timber industries in South Australia. *Forestry Matters!* is used by teachers preparing for forestry education activities, students researching forestry topics, and others wanting to know more about forestry. Originally developed in 2000 in consultation with teachers, educational consultants and industry and updated in 2007, *Forestry Matters!* has been circulated to all schools in the state and is also available on the PIRSA website.³

Visitors to forest reserves can obtain pamphlets from forest information centres or read interpretive signs while in the forest. Forest education and awareness programs are linked to other environmental education programs and are used by government agencies, the forest industry, educational institutions and especially by ForestrySA's Friends of the Forest volunteer program.

³ www.pir.sa.gov.au/forestry/programs/education/current_forestry_matters_resource

Indicator 7.1c

Extent to which the economic framework supports the conservation and sustainable management of forests

Rationale

This indicator examines the extent to which government policies support the conservation and sustainable management of forests. Government policies on investment, taxation and trade influence the level of investment in forest conservation, forest growing and timber processing.

Key points

- Australia continued to pursue economic and trade reforms over the reporting period, with a general aim of further increasing efficiency in the allocation of resources.
- Tariffs on imported forest products are in the range from zero to 5%; goods from all least-developed countries have been tariff and quota-free since July 2003.
- Several billion dollars of private investment in wood processing infrastructure was announced by investors between 2001–02 and 2005–06, including proposals for two new pulp mills.
- National taxation arrangements for plantation-based managed investment schemes have contributed to significant increases in Australia's plantation base.
- Governments are developing market-based mechanisms and incentives to promote reforestation and improved forest management as a way of protecting catchment values, particularly in agricultural landscapes.
- Environmental assets have been added to national and sector balance sheets, including native standing timber available for harvesting and plantation timber. The values of those two assets grew at average annual rates of 5.6% and 3.8%, respectively, over the period from 1997 to 2005.

Plantation expansion

Over the past decade there has been a significant increase in plantation establishment, particularly of short-rotation hardwoods (Indicators 2.1b and 6.2a). The main economic driver of this growth has been managed investment schemes (see below). The development of the plantation estate is underpinned by *Plantations for Australia: the 2020 Vision*, a strategic partnership between the Australian, state and territory governments and the plantation timber-growing and processing industry. The overarching principle of the vision is to enhance regional wealth creation and international competitiveness through a sustainable increase in Australia's plantation resources, based on a notional target of trebling the 1997 area of commercial tree crops by 2020 (Indicator 7.1b).⁴

Private investment

During the period from 2001–02 to 2005–06, several billion dollars of private investment in infrastructure was announced in the wood processing industry. Announcements included the development of a \$1.7 billion pulp mill at Bell Bay in Tasmania, a \$1.5 billion pulp mill in Penola in South Australia, and a \$450 million upgrade of Visy's pulp and paper mill at Tumut in New South Wales.

Managed investment schemes

New taxation arrangements for investments in forestry managed investment schemes came into effect in July 2007. The arrangements, which are intended to encourage the further expansion of the plantation estate through private sector investment, require that 70% of investor funds be used to meet direct forestry costs, such as land rental and plantation establishment, tending and harvesting. Other key changes include extending the time for planting from 12 to

⁴ www.plantations2020.com.au/vision/index.html

18 months, and allowing secondary trades in investments after a holding period of four years. The latter change will increase the liquidity of investments and contribute to the development of market pricing information, and may also encourage the development of longer-rotation plantations for structural grade timber.

Industry restructuring

Australian governments allocated \$48 million over the reporting period to support structural adjustment programs in the native forest hardwood timber industry in the main native timber producing states (New South Wales, Queensland, Tasmania, Victoria and Western Australia). The purpose is to encourage investment in capital equipment to improve the performance of the harvesting and haulage sectors, and to increase the ability of the industry to process and add value to Australian native forest timber and to market and promote its products.

In Tasmania, industry restructuring is being assisted by funds provided through the Tasmanian Forest Community Agreement, which was announced jointly by the Australian and Tasmanian governments in May 2005. Under the agreement, the two governments committed over \$250 million to preserve old-growth forests (through a Forest Conservation Fund) and revitalise the timber industry. For the latter purpose, investments of over \$200 million are to be made in the Tasmanian forest industry, including \$115 million to fund plantation establishment and productivity improvements, \$42 million to support the hardwood industry, \$4 million to build skills in the forest industry, \$10 million in assistance to the softwood industry, and \$11.4 million in assistance to non-wood forest product industries, such as beekeeping.

Environmental services

The sale of environmental goods and services in forests emerged during the reporting period as a future driver of growth in the forest sector. For example, South Australia introduced a framework for carbon rights and informed the investment community of opportunities to invest in the wood processing industries and plantation resources of the Green Triangle. In Western Australia, the Forest Products Commission is producing a series of tree farming and industry development plans, which aim to deliver environmental services in target areas through the development of viable plantation industries. In New South Wales, Forests NSW has initiated various joint-venture arrangements for plantations; for example, the Pilot NSW Environmental Services Scheme has mechanisms for rewarding land managers for investing in commercial activities that also have environmental benefits.

Table 111: Value of Australia's environmental assets (current prices)

	June 1997 (\$ billion)	June 2005 (\$ billion)	Average annual increase (%)
Rural land	93	209	10.6
Other land	633	1,710	13.3
Oil and gas	69	148	10.0
Other subsoil	47	195	19.3
Native standing timber	2	3	5.6
Plantation standing timber	6	8	3.8
Total	851	2,273	13.1

Note: Totals may not tally due to rounding.

Source: ABS (2006e)

A significant amount of work took place over the period to develop a basis for trading carbon sequestered by plantations. For example, legislation was enacted in most states for the recognition of carbon sequestered by plantations as a separate property right (Indicators 6.1c and 7.1a).

Assessing environmental and social values

The Australian Bureau of Statistics now includes six environmental assets in national and sector balance sheets: rural land, other land, oil and gas, other subsoil assets, native standing timber available for harvesting, and plantation timber. The Australian national balance sheet recorded \$5.6 trillion in assets on 30 June 2005, of which \$2.3 trillion (41%) was classed as environmental assets (Table 111). Over the 1997–2005 period, the value of environmental assets grew at an average annual rate of 13.1%. This strong growth can be attributed mainly to price effects, with an average annual real change of 1.6%.

National Competition Policy

The National Competition Policy aims to promote efficient competition between public and private enterprises to ensure that government businesses have no competitive advantages or disadvantages compared with their private competitors. To comply with the policy's competitive neutrality requirements, state forest agencies must charge prices (royalties) for sawlogs and pulplogs which, over the long term, generate revenues that at least cover the costs of managing their forests for wood supply and provide a commercial return on assets, including land and timber. Moreover, the focus on cost recovery and the trend to the greater transparency and accountability of public agencies in their management of public resources have encouraged forest agencies to evaluate the efficiency and financial performance of their forest management practices.

Trade policy

Australia imposes tariffs ranging from zero to 5% on imported forest products; the government introduced tariff and quota-free entry for all goods from all least-developed countries on 1 July 2003. The low level of protection offered to the Australian forestry industry, and the market-oriented approach to exports, have led to an increase in resource allocation efficiency and the development of a competitive and sustainable forest and forest product sector that is responsive to global markets.

The Australian Government works actively for the removal of policies in other countries that may distort international markets and lead to over-harvesting. It promotes the removal of trade barriers such as tariffs and tariff quotas on forest products to create improved opportunities in key export markets.

Australia pursues opportunities to negotiate better trade and investment conditions by:

- negotiating globally through the World Trade Organization (WTO)
- cooperating with countries in our region, such as through the Asia Pacific Economic Cooperation (APEC) forum
- negotiating free trade agreements (FTAs).⁵

Australia pursues bilateral and regional trade agreements where they complement Australia's wider trade-reform objectives and deliver benefits either faster or beyond those that can be achieved through the World Trade Organization. Australia is negotiating free trade agreements (FTAs) with China, Japan and Malaysia and a regional FTA with the Association of Southeast Asian Nations and New Zealand. Australia has agreed in principle to begin bilateral negotiations with Chile. In addition, the private sector is conducting a joint study on the feasibility of an FTA with the Republic of Korea.

FTAs are increasingly important to the forest-based industries. For example, China is expected to import 125 million cubic metres of wood per year by 2010. By then, Australia will be harvesting 36 million cubic metres per year with the potential to export up to 10 million cubic metres to help meet Chinese demand.

The new and potential FTA negotiations will build on FTAs already completed with the United States of America, Singapore, Thailand and New Zealand, and are expected to provide greater export opportunities for Australia's forest products.⁶

Investment, including foreign investment

Stringent controls over land-use changes and industrial development exist in Australia to protect environmental, cultural and amenity values. Provided such values are protected, private investment in the forest and forest product industries is generally free of industry-specific legal and regulatory constraints. Foreign investment is regulated by the *Foreign Acquisitions and Takeovers Act 1975* (Cwlth). Certain types of proposals by foreign interests to invest in Australia require prior approval and need to be declared to the Australian Government.

Private forest management

The sustainability of forest operations in Australia's private native forests is under increased scrutiny, which has led to an increase in legislative, regulatory and voluntary measures governing the management of private forests (Indicator 7.1a). Recent research indicates that economic incentives are required in order to improve the management of private native forests and that those incentives should recognise the public benefits of good forest stewardship.⁷ Several recent initiatives aim to encourage the conservation and management of private native forests through incentives-based mechanisms.

Partnerships involving the states and the Australian Government support 19 private forestry development committees in plantation regions throughout Australia. The role of the committees is to assist the development of sustainable private forestry, including through regional strategies to encourage industry investment and development. Some (such as the Northern Territory Private Forestry Development Committee) have developed codes of practice for private plantations to improve management practices.

A number of state-based incentive programs were launched during the reporting period to discourage land clearing. In South Australia, they included a statewide project to provide incentives for farmers to manage their native forests, and amendments to the *Native Vegetation Act 1991* that have made it more difficult to get clearance approval for land clearing, in particular for dead standing vegetation.

References and further reading

ABS (2006e), Mallawaarachchi and Szakiel (2007), Thompson and Connell (in review) (list at the back of the report).

5 www.dfat.gov.au/trade/ftas.html

6 www.dfat.gov.au/trade/ftas.html

7 Thompson and Connell (in review).

Case study 64: Community conservation areas in western NSW

Forests NSW has worked extensively with the timber industry and other agencies to implement the state government's decision on the Brigalow Belt South (and Nandewar) Regional Assessment, which was announced in May 2005. The decision permanently conserves 352,000 hectares of forest stretching from Dubbo to the Queensland border, including 328,000 hectares in a 'Community Conservation Area' (CCA).

The CCA is a new land tenure created as part of the assessment process. It is divided into different zones that allow for differing land uses and intensities of human management, including conservation, Indigenous cultural heritage, mineral exploration and extraction, and forestry. A Brigalow and Nandewar CCA Agreement currently being developed will provide a framework for coordinated management across government for the entire area.

The Community Conservation Council, which was established under the *Brigalow and Nandewar Community Area Act 2005*, oversees the CCA and is advised by three new community-based community conservation advisory committees. The committees have strong community representation through local industries such as forestry, mining, the apiary industry and farming, along with local recreation users, environmental groups and Indigenous communities.

The Community Conservation Council supported Forests NSW's proposal for cypress thinning, inventory and access to private-property timber to improve biodiversity and timber values. As a result, \$12 million will be provided over five years to create up to 45 additional jobs in the region, including jobs for affected timber and forest workers, as well as opportunities for employment in rural towns and Indigenous communities.

Up to 57,000 cubic metres of cypress sawlogs has been allocated per year in 20-year wood-supply agreements signed with Gunnedah Timbers, Baradine Sawmilling, Grants Sawmilling at Narrandera and Condobolin, Gulargambone Sawmilling and Austin's Sawmill at Quirindi to ensure the maintenance of the timber industry in the region.

An integrated forestry operations approval will be finalised in 2008. This provides a framework for forestry operations, including regulatory regimes for environmental planning and assessment, for the protection of the environment and the conservation of threatened species.

Source: Forests NSW



Eucalypt-cypress pine forest in the Brigalow Belt South region.

Indicator 7.1d

Capacity to measure and monitor changes in the conservation and sustainable management of forests

Rationale

This indicator examines the capacity of forest owners and agencies to measure and monitor changes in the forest and the impact of forest activities. A comprehensive measurement and monitoring program provides the basis for forest planning to support sustainable management.

Key points

- The capacity to report trends in indicators, while still variable, is generally much improved since SOFR 2003.
- Data are comprehensive in coverage, currency and frequency for 15 indicators and more limited for 25 indicators. Case studies and other narrative material provide a large part of the information for four indicators.
- The ability to report on forest change varies considerably by tenure. The best information is available on multiple-use public forests and some public nature conservation reserves, for which governments require reporting against indicators. The biggest data gaps remain for leasehold and private forests.
- Jurisdictions continue to improve the coordination of reporting on forest indicators.

The extent to which relevant and up-to-date information about forests is available provides a measure of the capacity to demonstrate sustainable forest management. Reporting on the capacity to measure change, in turn, offers an opportunity for forest managers to review and prioritise data collection to make future measurement and monitoring more timely and relevant.

Reporting on sustainable forest management and management of forest values

State forest management agencies are committed to reporting regularly on forest management in multiple-use public forests using a 'triple bottom line' approach that incorporates economic, environmental and social values. Their reporting processes provide the level of specificity required for their jurisdictions, while the national reporting process provides a whole-of-nation overview and the basis for meeting international obligations.

For example, Victoria produced its first SOFR in 2005 as a benchmark for future five-yearly reports on forest management in the state's forests. The report is structured in line with the international Montreal Process, is consistent in style with the national SOFR, and complements the Victorian *State of the Parks Report* and *State of the Environment Report*. Tasmania's most recent SOFR was prepared in 2007 (Case study 66 on the SOFR website). In New South Wales, the State of the Parks assessment is conducted every three years (Case study 65 describes the reporting process for multiple-use public forests in New South Wales).

Capturing data and information

If a reporting system is to measure change in Australia's forests successfully, it must be underpinned by adequate and ongoing data collection. Few national reporting indicators are measured easily, and the availability, coverage and currency of data vary considerably. In the preparation of this report, data on all indicators were received from New South Wales, South Australia, Tasmania, Victoria and Western Australia; data on some indicators were received from the Australian Capital Territory, the Northern Territory and

Queensland. For some indicators, national-level data formed the major part of the analysis.

The focus on and priority given to data collection vary widely according to tenure. In publicly managed forests, especially those managed for multiple uses, including timber production, data are available for reporting on a range of indicators. By contrast, private landowners are rarely required and often have little incentive to collect data on their forests or to make such data available. As a result, the biggest gaps in information on Australia's forests are for privately managed forests or concern non-timber values. The SOFR reporting framework provides a mechanism for presenting disparate data in a consistent and repeatable format and should, over time, help to address problems associated with varying data collection processes, classification systems and standards.

Overall, the capacity to report trends has increased since SOFR 2003. For SOFR 2008, there was generally very good information on indicators relating to the contributions of forests to carbon cycles (Criterion 5), the legal, institutional and economic frameworks for forest conservation and sustainable use (Criterion 7), and several indicators in Criteria 2 and 6. For those indicators (around a third of all the indicators), it is possible to report change across various forest tenures. The remaining indicators were generally less amenable to reporting trends.

The best information is available for multiple-use public forests and some public nature conservation reserves, for which governments require reporting. Table 112 provides an assessment of the capacity to report on trends and an assessment of data availability, currency and coverage, by indicator.

Key data gaps in forest mapping

Data quality for forest type and extent varies by jurisdiction. In general, jurisdictions with large commercial forest areas and public forest management agencies were usually able to provide a significantly higher quantity and quality of data. Quality is highest for forest types in wetter regions along the country's east coast and in the southeast and southwest, with coarser-resolution mapping and little plot data available for drier inland forest types. In most jurisdictions, the best data are available for public forest land managed for wood production, while the biggest gaps are for forests on leasehold land. Data for forests on private land are slightly better than for those on leasehold land, although mapping is often old and inconsistent. Data on forests in nature conservation reserves are of variable quality, although some forests are well mapped for conservation management purposes.

Data systems

State and territory agencies and some private forest owners and managers collect primary forest inventory data, but the frequency and scope of such data collection varies across the jurisdictions and by tenure. Inventories and assessments are undertaken regularly in all public forests managed for timber production, both for management purposes and to monitor and report performance. At the national level, the National Forest Inventory has primary responsibility for national forest assessment and reporting; it compiles and integrates data supplied by states and territories into national classification schemes and national databases. Inventories of plantation forests are conducted annually at the state and territory level and every five years at the national level.

Varying data collection techniques are needed to monitor and assess Australia's widely dispersed and varied forest types, including coarse-scale, remotely sensed data, air photo interpretation, and finer-scale, highly accurate data collected manually in the field. In addition to traditional forest inventories, broader forest assessments require a variety of social and economic data that must be obtained from a wide range of sources. These include the Australian Bureau of Statistics and the Australian Bureau of Agricultural and Resource Economics for data on employment and production, the National Land and Water Resources Audit for data on salinity, the Department of Climate Change for carbon-related data, and research agencies for a wide range of other data.

Recently, information availability has been improved by substantial investment in public forest inventory and by new information generated through government-mandated measures to protect non-wood forest values. However, private forest owners do not always have sufficient resources to undertake forest mapping, inventory or other data-gathering surveys.

References and further reading

DEC NSW (2004), DSE (2005), EPA SA (2003), EPA Qld (2003), EPA WA (2007), Forests NSW (2006), Forestry Tasmania (2007), Parks Victoria (2007) (list at the back of the report).

Web resources

Case study 66: TASVEG – Tasmania's reporting system

Table 112: Capacity to report trends in indicators and availability, coverage and currency of data to address indicators

Indicator	Data status			
	Report trend	Data coverage	Data currency	Data frequency
Criterion 1: Conservation of biological diversity				
1.1 Ecosystem diversity				
1.1a Area of forest by type and tenure	●	●	●	●
1.1b Area of forest by growth stage	●	●	●	●
1.1c Area of forest in protected area category	●	●	●	●
1.1d Fragmentation by forest cover	●	●	●	●
1.2 Species diversity				
1.2a Forest-dwelling species with ecological information	●	●	●	●
1.2b The status of forest-dwelling species at risk	●	●	●	●
1.2c Representative species monitored	●	●	●	●
1.3 Genetic diversity				
1.3a Species at risk of loss of genetic variation	●	●	●	●
1.3b Genetic resource conservation mechanisms in place	●	●	●	●
Criterion 2: Maintenance of productive capacity of forest ecosystems				
2.1a Native forest available for timber production	●	●	●	●
2.1b Age class and growing stock of plantations	●	●	●	●
2.1c Annual removal of wood products and volume sustainable	●	●	●	●
2.1d Annual removal of non-wood products and volume sustainable	●	●	●	●
2.1e Effective forest regeneration and plantation establishment	●	●	●	●
Criterion 3: Maintenance of ecosystem health and vitality				
3.1a Scale and impacts on forest health and vitality	●	●	●	●
3.1b Planned and unplanned fire NEW	●	●	●	●
Criterion 4: Conservation and maintenance of soil and water resources				
4.1a Managing for protective function NEW	●	●	●	●
4.1b Managing soil erosion NEW	●	●	●	●
4.1c Managing soil physical properties NEW	●	●	●	●
4.1d Managing water quantity NEW	●	●	●	●
4.1e Managing water quality NEW	●	●	●	●
Criterion 5: Maintenance of forest contribution to global carbon cycles				
5.1a Contribution to greenhouse gas balance	●	●	●	●
Criterion 6: Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies				
6.1 Production and consumption				
6.1a Value and volume of wood products	●	●	●	●
6.1b Value, volume and use of non-wood products	●	●	●	●
6.1c Value of forest-based services NEW	●	●	●	●
6.1d Wood production and consumption	●	●	●	●
6.1e Recycling	●	●	●	●
6.2 Investment in the forest sector				
6.2a Investment and expenditure in forests	●	●	●	●
6.2b Investment in R&D and new technologies	●	●	●	●
6.3 Recreation and tourism				
6.3a Forest area available for recreation/tourism	●	●	●	●
6.3b Forest recreation facilities and use	●	●	●	●
6.4 Cultural, social and spiritual				
6.4a Area to which Indigenous people have use and rights	●	●	●	●
6.4b Registered places of non-Indigenous cultural value	●	●	●	●

Table 112: Capacity to report trends in indicators and availability, coverage and currency of data to address indicators
continued

Indicator	Data status			
	Report trend	Data coverage	Data currency	Data frequency
6.4c Protection of Indigenous values	●	●	●	●
6.4d Importance of forests to people NEW	●	●	●	●
6.5 Employment and community needs				
6.5a Employment	●	●	●	●
6.5b Wage and injury rates	●	●	●	●
6.5c Resilience of forest communities	●	●	●	●
6.5d Resilience of Indigenous communities	●	●	●	●
Criterion 7: Legal, institutional and economic framework for forest conservation and sustainable management				
7.1a Legal framework NEW	●	●	●	●
7.1b Institutional framework NEW	●	●	●	●
7.1c Economic framework NEW	●	●	●	●
7.1d Capacity to measure and monitor NEW	●	●	●	●
7.1e Capacity to conduct and apply R&D NEW	●	●	●	●

Key

Colour rating	Report trend	Data coverage	Data currency ^a	Data frequency ^b
●	Able to report trends across all or most tenures	Whole country assessed	1998+	Annual–5-yearly
●	Partial capacity to report trends	Incomplete data	1980–2001	>5 years
●	Limited capacity to report trends	Case study	Incomplete	Once only
●	No capacity to report trends	No data	No data	No data
○	Not applicable	Range in data coverage, currency and frequency	Range in data coverage, currency and frequency	Range in data coverage, currency and frequency

a Currency of available coverage.

b Frequency at which the colour code is updated.

Note: The predominant response appears in the relevant background colour but is also a possible mix of other possible responses. New indicators are red in the 'Report trend' column since there are no earlier matching data to enable trend analysis.

Case study 65: Transparent reporting for continual improvement in New South Wales

Since 1997, Forests NSW has produced an annual sustainability report, the *Social, Environmental and Economic (Seeing) Report*, with the aim of communicating the outcomes of management in multiple-use public forests for a range of forest values. The database used for the report, known as SEEDS (Social, Environmental and Economic Data System), also forms the basis of other statutory and non-statutory reports, including those associated with state forest agreements, integrated forestry operations approvals, ecologically sustainable forest management plans, performance against the Australian Forestry Standard, the New South Wales *State of the Environment Report*, the national SOFR, and the Commonwealth–state RFAs.

The Forests NSW reporting process is based on criteria and indicators formulated through the international Montreal Process. The agency's new environmental management system (EMS), which is certified to the International Organization for Standardization's ISO 14001:2004 EMS standard, sets the framework for achieving and continually improving environmental performance by introducing a systematic approach to measuring and monitoring. Central to the EMS is the Forests NSW environment policy, which is supported by ecologically sustainable forest management plans and

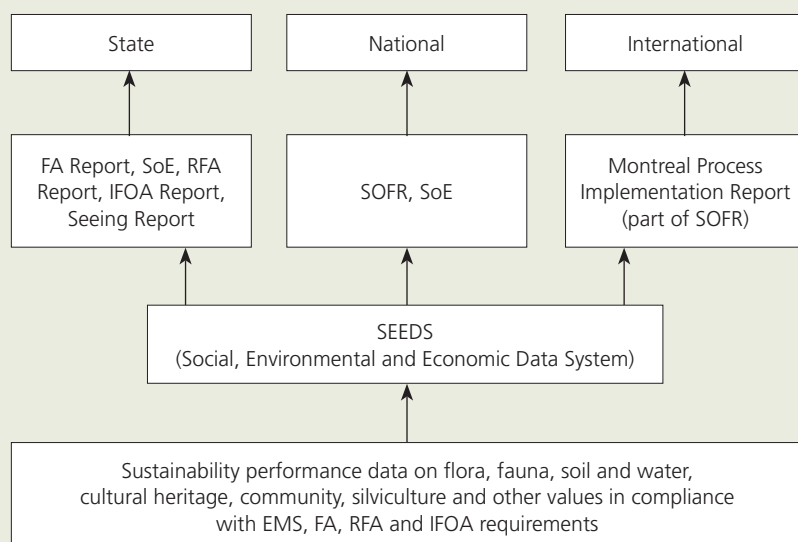
which outlines the agency's broad strategies, performance indicators and defined outcomes.

Figure 96 shows the reporting processes served by the SEEDS database at the state, national and international levels.

Source: Forests NSW (2006)



Figure 96: Reporting processes served by the SEEDS database of Forests NSW



EMS = environmental management system; FA = (state) forestry agreement; IFOA = integrated forestry operations approval; RFA = regional forest agreement; SoE = state of the environment; SOFR = State of the Forests Report

Indicator 7.1e

Capacity to conduct and apply research and development aimed at improving forest management and delivery of forest goods and services

Rationale

This indicator reports on the scientific understanding of the Australian forest ecosystem characteristics and functions needed to underpin sustainable forest management. Research, inventory and the development of assessment methodologies provide the basis for sustainable forest management.

Key points

- To improve overall collaboration and coordination of forest research, Australian, state and territory forest agencies have developed the following set of nationally critical research priorities: the impact of climate change on forest management; the role of forests in managing Australia's water resources; managing Australia's forests for multiple objectives; forest health and biosecurity; and forest products.
- Forest and Wood Products Australia provides a nationally coordinated investment approach to forestry industry research and development and has been given a stronger role in marketing and promotional services. It works with Australian, state and territory research providers.
- Governments are also investing in research and development through a variety of specific-purpose initiatives in partnership with the private sector, which drives investment in forest processing and manufacturing.

A scientific understanding of the characteristics and functions of Australian forest ecosystems is needed to underpin their management. Research and development provide the basis for biological and timber inventory, forest management, the silviculture of harvested forests and the development of methods for assessing sustainable forest management. This indicator examines the institutional capacity for research and development. Indicator 6.2b quantifies investments in research and development and shows changes in investment priorities over the reporting period.

Research and development

Among the key national research priorities announced by the Australian Government in 2002 are improvements in processing efficiencies and sustainable natural resource management. Research by Australia's forest-related research organisations is contributing to both those priorities.

Forest and Wood Products Australia (FWPA) is Australia's major national research body in the forest and wood product sector.⁸ It invests in research and development projects relevant to the Australian forest and wood products sector and supports promotional and marketing activities. FWPA is jointly funded by the forest and wood product industry and the Australian Government. Other organisations also undertake forest-related research and development at a national level, including cooperative research centres (CRCs), universities, and the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The Australian Government and state and territory governments encourage research bodies such as universities, CSIRO and other government research agencies to cooperate with industry, government and clients as a way of ensuring that collaborative research focuses on key priorities. Such cooperation is often achieved through CRCs. CRCs that undertook forest-related research in

⁸ FWPA is an industry-owned research and development and marketing company created in 2007 to replace the Forests and Wood Products Research and Development Corporation.

the reporting period include the CRCs for greenhouse gas accounting; tropical rainforest ecology and management; tropical savanna management; and wood innovations. The CRC for Forestry continues the work of two previous forestry-based CRCs – the CRC for Temperate Hardwood Forestry (1991–97) and the CRC for Sustainable Production Forestry (1997–2005). A notable recent addition to the list of forest-related CRCs is the Bushfire CRC, which was established in July 2003.

A considerable amount of forest-related research is undertaken independently in government agencies (such as the Bureau of Rural Sciences and the Australian Bureau of Agricultural and Resource Economics at the national level) and universities. Most state governments reported that investments and employment (full-time equivalents) in forest-related research and development in 2005–06 were similar to those in 2001–02.

Recent research has led to the development of new silvicultural regimes designed to replace clearfelling and improve the conservation of all forest values. Case study 67 in this indicator examines research into alternatives to clearfelling in Australia's native forests; Case study 43 in Indicator 6.2b describes a long-term research endeavour in Tasmania.

To improve overall collaboration and coordination of forest research, the Australian, state and territory governments are supported by the Research Priorities and Co-ordination Committee (RPCC), which is a subcommittee of the Forestry and Forest Products Committee. The RPCC comprises representatives of national, state and territory agencies involved in forest and forest management research. It aims to:

- optimise the national and regional benefit from investment in forest research
- maintain an overview of forest research in Australia, with particular reference to the integration of public and private research and development arrangements and the implementation of research findings
- address research-related policy issues.

The RPCC oversees eight research working groups covering genetic resources; forest measurement and information; forests and water; native forest management; plantation management; fire management; forest health; and forest products.

In 2007, the RPCC developed a paper titled *Directions for Research and Development in the Forestry Sector – 2007–2010* based on the outcomes of a stakeholder driven workshop on forest research priorities and directions held in September 2006. The paper identifies five broad forest research themes of national importance: the impact of climate change on forest management; the role of forests in managing Australia's water resources; managing Australia's forests for multiple objectives; forest health and biosecurity; and forest products.

As discussed in indicator 6.2b, there has been a significant increase in research relating to the manufacture of forest products.

New technologies

Technology development can improve the contribution of the forest sector to national wealth through improved production efficiency and increased employment.

New technologies were adopted across all sectors of the forest and forest product industries during the reporting period. This has resulted in significant changes to employment and the location of wood harvesting and processing industries and influenced the shift of production from native forests to plantations. Case studies 68 and 69 illustrate those changes.

References and further reading

Forestry Tasmania (2007), FWPRDC (2006) (list at the back of the report).

Web resources

Australian Government Department of Education, Employment and Workplace Relations. National Research Priorities: www.dest.gov.au/sectors/research_sector/policies_issues_reviews/key_issues/national_research_priorities

Council of Rural Research & Development Corporations' Chairs website: www.innovateaustralia.com

Forest and Wood Products Australia website: www.fwprdc.org.au

Warra Long-term Ecological Research Site website: www.warra.com



Tall eucalypt forest, Victoria.

Case study 67: Research on alternatives to clearfelling in Australia's native forests

Recent research has led to the development of new silvicultural regimes designed to replace most clearfelling and improve the conservation of all forest values.

The 2005 Tasmanian Community Forest Agreement (Indicators 7.1a and 7.1c) requires Forestry Tasmania to implement non-clearfelling silviculture in a minimum of 80% of the annual harvest area of coupes of old-growth forest in multiple-use public native forest by 2010.

The clearfell, burn and sow (CBS) system has raised concerns, particularly because of reductions in late secondary species and structures, a decline in the special species timber resource (slow-growing non-eucalypt species prized by craft workers) when rotations of about 90 years are used, and the aesthetic effect of the system immediately after felling and burning. These concerns indicated a need to explore alternatives to clearfelling that are more socially acceptable, that increase the ability, or shorten the period, for the regenerated forest to return to pre-harvest condition, and that are still safe to implement and commercially viable.

Researchers took advantage of the Silvicultural Systems Trial, one of the projects under way at the Warra Long-term Ecological Research Site. The 200-hectare trial was conducted from 1998 to 2004 in multi-aged, 50-metre tall lowland wet eucalypt forest dominated by messmate stringybark (*Eucalyptus obliqua*), with the aim of comparing CBS with five alternative treatments:

- CBS with dispersed understorey islands that occupy <5% of the coupe area
- 80-metre width stripfells
- 10–15% (basal area) dispersed retention
- 30% (canopy area) aggregated retention
- single tree/small group selection (openings < mature tree height wide).

The development of these treatments was informed by the relatively few silvicultural systems that had previously been established in wet eucalypt forests in southeastern Australia, the most significant of which was the silvicultural systems project in Victoria. Subsequent

terminology and modification and interpretation of the treatments have been informed by a developing awareness of international efforts to develop silvicultural alternatives in forest types traditionally managed for wood production by clearfelling.

The outcome of these trials has been the adoption of a form of variable retention silviculture called 'aggregated retention', which has been advocated for tall old-growth forest designated for wood production on public land. Under aggregated retention, representative patches of the original forest are kept among harvested sections of a coupe, so that forest influence is maintained over most of the area. As currently practised in Tasmania, 0.5–1.0-hectare aggregates of uncut forest are retained across a coupe, separated by 'fairways' approximately two tree heights in width. The slash on the fairways is burned to prepare a receptive seed bed for eucalypt regeneration.

Ten pilot variable-retention coupes have been harvested, with eight burned in the autumn 2007 burning season. Experience with these coupes indicates that planning for future aggregated retention coupes will need to consider a broader landscape approach, in preference to planning at the individual coupe level.

Source: Forestry Tasmania



As a result of research undertaken at Warra in the Silvicultural Systems Trial, variable retention silviculture has been applied operationally in other locations in Tasmania, here contrasted with clear-felled coupes in the background.

Case study 68: Value-adding technology

In Western Australia, Lignor Pty Ltd has developed and patented manufacturing technology to turn woodchips from the increasing supply of plantation hardwoods into engineered strand lumber and engineered strandboard – highly durable timber products that rival the strength of steel. The products' manufacture involves permanently setting the timber using a special resin under heat and pressure that prevents a loss of bonding when the products are immersed in water. Both are resistant to swelling, shrinking and warping and can be machined in any direction. Further treatments can be applied to make the products rot, termite and fire-resistant or to give them a smooth or anti-slip surface.

Other examples of new technologies in the forest industry include the use of soundwaves to measure timber stiffness in stress-grading machines and new, environmentally friendly, timber preservatives.



A plantation hardwood log is reduced to strands which are mixed with resin and compressed under heat and pressure to produce lumber.

Case study 69: Innovative planning for wood flows

The conceptual design, development and application of a high-tech plantation management system won Forests NSW a gold award in the 2005 New South Wales Premier's Public Sector Awards. Using the latest technology, the system forecasts the flow of softwood plantation timber from forest to customer. It predicts where wood is going to grow and where it will be transported, improving long-term forest management by ensuring that the best trees are harvested at the right time. While mainly used by Forests NSW in softwood plantations on the southwestern slopes, the system is also being deployed in even-aged regrowth native forests on the far south coast.

Streamlined planning and forecasting mean more efficient management of staff time, road networks and heavy machinery. About two-thirds of Forests NSW business is now on a 'delivered sales' basis, with the organisation responsible for growing, harvesting and hauling wood to the mill door. The new system allows planning across a 50–200-year period, which creates advantages in both environmental and commercial performance.

Source: Forests NSW