



Australian Government
Department of Agriculture,
Water and the Environment
ABARES

Proposed approach for Australia's State of the Forests Report – 2023 and beyond

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Australian Bureau of Agricultural and Resource Economics and Sciences

Position paper

November 2021



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Cataloguing data

This publication (and any material sourced from it) should be attributed as: Read SM, Hunn A. 2021. *Proposed approach for Australia's State of the Forests Report – 2023 and beyond*. ABARES Position Paper, Canberra, November, doi.org/10.25814/m2ee-2224. CC BY 4.0.

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Acknowledgements

The authors thank Melissa Farrelly for developing the draft web pages presented at Appendix B. Also acknowledged are members of the Forestry and Forest Products Committee, the National Forest Inventory Steering Committee, and the Montreal Process Implementation Group for Australia for their input to the proposed approach for *Australia's State of the Forests Report*.

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Executive summary

Demand for national data and information on Australia's forests is largely met through five-yearly preparation of an *Australia's State of the Forests Report* (SOFR) jointly by state, territory and the Commonwealth governments, and its publication by ABARES. The SOFR series meets legislative and policy obligations, and SOFR content and data are used widely across government, industry and the community.

A number of drivers for changes in SOFR reporting have been identified. These include the increasing frequency at which new data become available, and user expectations of access to current data, information and analysis in digital, online formats. In addition, it is increasingly difficult to assemble repeatedly the necessary resources for cyclical activities such as the five-yearly production of SOFR.

A review conducted by ABARES, in consultation with the Montreal Process Implementation Group for Australia and the National Forest Inventory Steering Committee, has articulated three major options for future national forest reporting: status quo five-yearly reporting, online-only five-yearly reporting, and online-first reporting with data updates at variable frequencies and a five-yearly 'SOFR Synthesis Report'. This position paper examines the advantages and disadvantages of each approach.

The benefits and consequences of transitioning to an online-first presentation of data and information include the ability to focus on key metrics, improve flexibility in publishing data and information, address resource timing constraints, and highlight the release of updated data and analyses.

This paper is available on the Forests Australia website at doi.org/10.25814/5e6w-dq70, together with *Australia's State of the Forests Report 2018*, associated data tables, figures and maps, and background papers on the mandate, drivers and benefits of national reporting on Australia's forests.

1 National forest reporting: the SOFR series

Australia's State of the Forests Report is the mechanism by which Australia meets legislative and policy obligations under the National Forest Policy Statement (NFPS) (1992), the *Regional Forest Agreements Act 2002* (RFA Act), and the National Forest Industries Plan (2018) *Growing A Better Australia*.

The NFPS, agreed by state, territory and the Commonwealth governments, established a vision, goals, objectives and policies for Australia's forests. Commitments in the NFPS included that the governments publish a 'state of the forests' review every five years:

the Governments' strategy will involve ... provision to the community of information about forests and forest management ... [including] ... appropriate information from which to produce and publish a 'state of the forests' review every five years.

This commitment in the NFPS was enhanced in the RFA Act to ensure national and regional monitoring and reporting for all Australia's forests:

the Minister must cause to be established a comprehensive and publicly available source of information for national and regional monitoring and reporting in relation to all of Australia's forests.

Under the National Forest Industries Plan, the Australian Government further committed as follows:

The Australian Government will assist in growing community understanding of forest management by reporting on the management of Australia's forests and forest industries through the State of the Forests reports.

1.1 Requirement for national data and information

Since 1998, the need for national data and information has been largely met through the five-yearly preparation and publishing of an *Australia's State of the Forests Report* (SOFR).

A paper titled *Benefits of producing Australia's State of the Forests Reports* ([Appendix A](#)) was prepared for FFPC in 2015 during the review of SOFR 2013. Identifying the benefits of producing the *Australia's State of the Forests Report* series is an important element of such reviews, to ensure that the identified benefits are maintained through any change to how the reports are produced. This paper is still relevant now.

Comprehensive data and information collected for and published in the national SOFR series has been used nationally in response to frequent requests for forest-related information from a range of Commonwealth Government departments and ministers, as well as state and territory government agencies. SOFR also satisfies diverse needs for forest-related data and information from industry bodies, academics, researchers, educators, students, conservationists, and the wider community. Delivery of national forest-related data and information through SOFR has brought consistent, coherent and credible contributions to public debate.

The data and information in each SOFR also contribute directly to other national reporting processes, including Australia's State of the Environment Reports, and the National Environmental Economic accounts.

Further, the SOFR series has been the main source of comprehensive data and information for preparation of Australia's responses to the FAO's five-yearly Global Forest Resources Assessments (GFRAs). These are used in turn by Australia to report against forest-related components of the United Nations Sustainable Development Goals (SDGs), including Goal 15 "Life on Land". SOFR has also been the main source for responses to requests for national forest information from the United Nations Forum on Forests (UNFF), the Convention of Biological Diversity (CBD), and the FAO's Forest Genetic Resources Assessment process.

In the absence of the coordinated collation of data and information for SOFR, meeting the ongoing needs for forest-related data and information from ministers, government agencies, industry bodies, conservation groups, academia, and the public, as well as for international forest reporting, would entail frequent and time-consuming ad hoc requests to state, territory and Commonwealth government agencies.

1.2 Drivers for changing how national forest data and information are reported

Each SOFR report since 1998 has been published as a hardcopy book, with electronic versions available online. SOFR text and data have increasingly been made available in other formats (Table 1). In SOFR 2018, electronic versions of the data presented in all figures and tables were for the first time published online, hyperlinked from individual figures and tables in the SOFR pdfs. Four associated spatial datasets, and high-resolution versions of all maps, were also made available electronically, directly from the SOFR pdfs.

Table 2 Publication formats for Australia's State of the Forest Report series, 1998 to 2018

Item	SOFR publication				
	1998	2003	2008	2013	2018
Printed report	Y	Y	Y	Y	Y
Printed Executive Summary		Y	Y	Y	Y
Ordinary pdfs on website	Y	Y	Y	Y	
Accessible MsWord files on website				Y	
Accessible pdfs on website					Y
Spatial data on website				Y	Y
Maps on website					Y
MsExcel data for all figures and tables on website					Y

An internal review conducted by ABARES, synthesis of feedback received over time, and discussions with state and territory colleagues and other stakeholders, identified a number of drivers for changes in SOFR reporting. These include:

- a) the increasing frequency at which new data become available
- b) increasing user expectations of the availability of up-to-date data and information
- c) user expectations of access to data in digital, online formats
- d) decreasing likelihood of access to a five-yearly 'surge capacity' of resources for forest reporting
- e) increasing need for flexibility in reporting.

These drivers for change were an input to considerations of how the delivery of national 'state of the forest' reporting could be modernised.

2 Options for future national forest reporting

Improving efficiencies in the collation and delivery of SOFR data and information, and better meeting user needs, were key considerations ahead of the publication of SOFR 2018. SOFR 2018 therefore used the SOFR 2013 indicators as a general template for developing the SOFR 2018 indicators. In addition, SOFR 2018 better met user needs by making all individual table and figure data available electronically.

Continuing to build greater efficiency and flexibility into the preparation and delivery of SOFR, and further improving the user experience, have continued to be key considerations since the publication of SOFR 2018. Importantly, an equal goal has been to maintain the utility of SOFR as an effective and high-quality mechanism for meeting diverse demands for comprehensive national forest data and information.

Following the decisions taken at the workshop held after publication of SOFR 2013, all models considered for modernising the national SOFR retained Australia's criteria and indicator framework, as established under the Montreal Process. This framework allows substantial flexibility in the individual metrics that can be chosen for reporting, while maintaining compatibility with state and territory SOFR and RFA reporting processes and international reporting frameworks.

A number of options for ongoing national forest reporting through the SOFR process were considered. All options were designed to retain the availability of data and interpretative narrative. The three main options, with anticipated outcomes, are given in Table 3.

Table 4 Options for ongoing national forest reporting

Option 1: Status quo five-yearly reporting	
Five-yearly update of all data, indicators and explanatory narrative, full report published in hardcopy and pdf, with all data available online, as for SOFR 2018.	
Advantages	Disadvantages
No transaction costs for transfer to new medium or approach	Data still updated only every five years
	Only incremental improvements possible in presentation quality, preparation efficiency, flexibility of delivery, or user experience
	Significantly 'lumpy' preparation effort, requiring work to source additional resources every five years, with progressively reducing likelihood of full funding over time and associated likely decline in quality and comprehensiveness of reporting

Option 2: Online-only five-yearly reporting

Web-based reporting, with a web-page for each indicator containing static and interactive data tables, figures, maps and explanatory narrative.

Advantages	Disadvantages
Improved user experience and immediacy of access to data and information	
Potential for ongoing improvements in presentation due to flexibility of web-based delivery, and availability of updated software	
Allows focus on key metrics for each indicator, with separate supporting information that users can choose whether or not to view	Data updated only every five years
Ability to report foundational data-rich indicators over several web-pages, or co-report related data-poor indicators on one web-page	
Reduction in time and resource requirements from not producing a full hardcopy report	Initial increased level of effort in establishing web framework and content
Production of a five-yearly 'SOFR Synthesis Report' as online pdf and printed hardcopy, to meet mandate and provide data overview and interpretation	Significantly 'lumpy' preparation effort, requiring work to source additional resources every five years, with progressively reducing likelihood of full funding over time and associated likely decline in quality and comprehensiveness of reporting

Option 3: Online-first reporting, data updates at variable frequencies, five-yearly 'SOFR Synthesis Report'

Web-first reporting, with a web-page for each indicator containing static and interactive data tables, figures, maps and explanatory narrative. Data updated at variable frequencies based on availability and demand.

Advantages	Disadvantages
Improved user experience and immediacy of access to data and information	
Potential for ongoing improvements in preparation due to flexibility of web-based delivery, and availability of updated software	
Allows focus on key metrics for each indicator, with separate supporting information that users to choose whether or not to view	
Ability to report foundational data-rich indicators over several web-pages, or co-report related data-poor indicators on one web-page	
Reduction in time and resource requirements from not producing a full hardcopy report	Initial increased level of effort in establishing web framework and initial content
Production of a five-yearly 'SOFR Synthesis Report' as online pdf and printed hardcopy, to meet mandate and provide data overview and interpretation	
Effort spread more evenly over time.	
Data updated more frequently for key indicators	Need to coordinate updates with state and territory update schedules
Ability to disseminate and discuss results from individual indicators as these are updated	

3 Considerations for proposed modernised delivery of national forest reporting

3.1 Online reporting

Separate 'key' (or 'main') webpages would be developed for each of the 44 indicators presented in SOFR, hosted on the Forests Australia website¹. This provides a user-centered design allowing focus on key elements of content.

Key indicator webpages would present a brief rationale, context and definitions for each indicator, then key national metrics with sufficient explanatory narrative to satisfy the high-level needs of users to understand the origin and applicability of the data. Trends over time would be presented where available. Key metrics will correspond with individual 'data tiles' or 'drop-downs' on the key webpage for each indicator. A linked page or pages of supporting information would contain additional indicator detail, such as a compilation of underpinning state and territory data, a description of the methods, longer narrative treatment of issues where warranted, and for some indicators individual case studies. Drafts of a possible web-based format for Indicator 3.1b² are presented at [Appendix B](#).

Some indicators that cover a range of important topics will need more than one key web page to present each important topic separately. An example is Indicator 7.1b, which could have three key web pages that separately report the institutional framework, forest certification, and forest-related education. The opportunity also exists to present related indicators that cover similar material on a single web-page, including for indicators where there is a paucity of data. Examples are Indicators 4.1b and 4.1c on soils, and 4.1d and 4.1e on water.

A hyperlink on the key webpage for each indicator would allow the material to be downloaded as a pdf. MsExcel datapacks will be available to download for each indicator, as for SOFR 2018.

ABARES is also developing capability in, and assessing the potential for, using Microsoft PowerBI and Tableau as tools for interactive data presentation. There are also plans to develop the Forests Australia website to contain interactive maps, displayed through mapping tools such as the ArcGIS Online portal.

3.2 Five-yearly publication of a SOFR Synthesis Report

A national 'SOFR Synthesis Report' is proposed to be published every five years, similar to but more substantial than previous SOFR Executive Summaries. The first of these would be titled *Australia's State of the Forests 2023 - Synthesis Report*.

¹ awe.gov.au/abares/forestsaustralia

² Details of the indicator framework are given at awe.gov.au/abares/forestsaustralia/framework

These synthesis reports would be summaries of published indicator content as at a particular point in time, likely arranged thematically as for previous SOFR Executive Summaries. They would be prepared in a way that satisfies reporting obligations under the NFPS and the RFA Act.

A compilation of the key indicator webpages into a single pdf would be made available at time of publication of each SOFR Synthesis Report, to form the basis for five-yearly international reporting, including to the Montreal Process and the FAO Global Forest Resources Assessment.

3.3 Assessment of tables and figures in SOFR 2018 for future reporting

Following the publication of SOFR 2018, ABARES assessed each of the 358 tables and figures presented in the 44 indicators, plus those presented in the Executive Summary, Introduction and Appendices, to determine which tables and figures represented metrics suitable for continued reporting on 'key' indicator webpages, which would be suited for 'supporting information' webpages, and which did not need to be maintained for a web-based SOFR (see [Appendix C](#) for example assessments).

Approximately 30% of the tables and figures presented in SOFR 2018 were assessed as sufficiently important and informative nationally to continue be presented on the 'key' indicator webpages: these will comprise the ongoing SOFR data that can be reported consistently over time. A similar number of tables and figures were identified for reporting across the 'supporting information' indicator webpages.

The number of key tables and figures will vary between indicators. For some indicators, similar tables or figures may be combined into interactive PowerBI displays embedded in or linked to the webpage. For indicators where the main treatment is narrative, either due to insufficient data or because of the nature of the topic, the 'key' webpage content may be arranged across a series of topic-based 'drop-downs'.

3.4 Frequency of data updates

Separation of data reporting onto separate webpages for each indicator allows for different data update frequencies for each indicator. Optimal data update frequencies will vary from indicator to indicator, and over time with changing priorities. ABARES therefore assessed each table and figure from SOFR 2018 to establish appropriate update frequencies for each reported metric, and thus for each indicator, considering data availability, resourcing efficiencies and likely user needs ([Appendix C](#)).

Some data can readily be updated annually (e.g. tabular updates of plantation area from the National Plantation Inventory, or tabular updates of forest area change from the National Greenhouse Gas Inventory Reports). Other data will continue to be acquired on a five-yearly basis (e.g. ABS Census employment data), or some other frequency (e.g. national species data). A significant subset of indicators would continue to report data for five-year periods, the 'SOFR reporting period', because of the effort required for regular updates. Some indicators may be updated less frequently than every five years.

Establishing proposed update frequencies for each indicator then led to the drafting of a year-by-year schedule for the update of data across the 44 indicators. Construction of this schedule considered how best to spread effort from year to year, while meeting all reporting obligations,

and recognised the timing of data availability from national agencies and through existing state and territory reporting processes.

3.5 Summary of proposed approach for national forest reporting for 2023 and beyond

Desired outcomes for future SOFR reporting include:

- continue to satisfy the mandate for a national SOFR
- continue reporting based on the Montreal Process criteria and indicator framework
- meet user needs for more up-to-date data delivered in a wider range of formats
- allow the effort of compiling and reporting data to be spread more evenly from year to year
- allow a greater focus on key metrics, and on individually updated indicators
- continue the narrative explanation of key metrics and trends.

The proposed approach comprises:

- an online-first format
- data updates at a frequency driven by the availability of data and by practicality, rather than data updates only at pre-set five-yearly intervals
- key metrics presented on a 'key' webpage for each indicator, with background data available on pages of supporting information
- webpages with data visualisation tools (e.g. PowerBI, Tableau, ArcGIS Online) as appropriate
- downloadable products, including pdf versions of each indicator, MsExcel datapacks of the data underpinning each figure and table, high-resolution maps and spatial data
- retaining narrative explanations alongside data on webpages, to allow users to understand the origin and applicability of the data, and the major drivers of trends over time
- coordinated requests to states, territories and national agencies for only the data required for the tables and figures that continue to be reported
- publishing a five-yearly national 'SOFR Synthesis Report'.

Earlier versions of this approach were outlined to the National Forest Inventory Steering Committee in July 2020, and the Montreal Process Implementation Group for Australia in June 2021. ABARES is grateful for these and other discussions with state and territory colleagues.

4 Benefits and consequences of a web-first SOFR

Consideration of a move to online-first presentation of data and information concluded that other benefits would also accrue for the SOFR series. These include an increased ability to focus on key metrics, improve flexibility in publishing data and information, address resource timing constraints, and schedule appropriately the release of material highlighting insights from individual indicator updates.

The basis of SOFR reporting since 2003 has been the Montreal Process framework of criteria and indicators. The criteria represent broad forest values, while the indicators allow presentation of measures of change over time for elements of the criteria. Within individual indicators, the increasing consistency of reporting of individual metrics across the SOFR series has allowed greater focus on the attributes of those metrics. The review and assessment of each figure and table in SOFR 2018 continued this process, and articulated the goal that each figure or table retained for future reporting represent data that are important, available, national in scope, and capable of meaningful repeat measurement over time. Metrics with these attributes are referred to as the 'key metrics' for the national SOFR series.

Updates of web versions of the SOFR indicators will be scheduled to correspond to the availability of new data, as far as resources allow. This is anticipated to spread the effort of compiling and reporting data more evenly from year to year, thereby eliminating the large peaks in effort previously experienced in producing five-yearly SOFRs, and addressing the difficulty in managing the required significant surge in resources in ABARES to produce each SOFR. Users of SOFR data and information will thereby have access to more up-to-date data, rather than waiting five years for the next release of SOFR. Users may also have access to better visualisations of data through interactive PowerBI displays and mapping tools. The online format will also allow the continual refinement of content, including the correction of errors as these are identified.

The progressive update and release of indicators will also allow for targeted media releases relating to new data, and the publishing of supporting 'insights' papers explaining the meaning or importance of new data releases. The current approach in which updates to all indicators occur at one time has not allowed the new data, methodological advances and interpretations for some indicators to be highlighted.

4.1 State and territory data supply

Indicators draw on a broad range of data sources, both from national agencies but also from within each state and territory government. Independent of changes in format and scheduling, the success of the national SOFR series against its mandates and drivers will continue to rely on this supply of relevant data. The proposed move to web-first delivery can be anticipated to lead to more efficient data supply through more manageable requests for data from ABARES. This should reduce time spent identifying data custodians and coordinating the supply of data, facilitated through a 'SOFR data coordinator' from each state and territory with knowledge of relevant data source areas across agencies in their jurisdiction.

The next set of requests for state and territory data will cover the 'SOFR reporting period' of 01 July 2016 to 30 June 2021, and cover only the key metrics for the sub-set of indicators to be updated before the publication of a SOFR Synthesis Report in 2023. A small subset of indicators will likely not be updated until after 2023, due to the lack of current data available for these indicators. This approach will allow the states and territories, and ABARES, to focus on sourcing and compiling data for indicators for which new data are known or likely to be available.

4.2 Issues to resolve

A range of issues remain to be resolved with the shift of the national SOFR series to a web-first presentation, in addition to coordination of data supply with the states and territories.

A core goal of this modernisation is to reduce overall resourcing requirements and to smooth the temporal 'lumpiness' of effort. However, significant effort is required for the transformation process. ABARES staff are still evolving their understanding of the GovCMS web-platform available for their use, and how to make optimal use of PowerBI or Tableau active graphics. Lastly, the synchronisation of effort between indicators needs careful planning: for example, more frequent spatial updates to Australia's forest extent could lead to consequential updates of at least 17 other indicators, so as to ensure consistency between underpinning spatial data and derived tabular data.

Appendix A: Benefits of producing Australia's State of the Forests Reports

Prepared by the *Australian Bureau of Agricultural and Resource Economics and Sciences* on behalf of the *National Forest Inventory Steering Committee* and the *Montréal Process Implementation Group for Australia*, and endorsed for publication by the *Forestry and Forest Products Committee* in November 2015

Overview

The Australia's State of the Forests Report (SOFR) series is the mechanism by which the state of Australia's forests, and changes over time in a range of social, economic and environmental forest-related indicators, are reported to government and industry stakeholders and the broader community. The SOFR series meets Australia's formal national reporting requirements for forest information, and the data assembled for SOFR are also used to meet Australia's international forest-related reporting requirements.

Characteristics of the SOFR series

1) Comprehensive

The SOFR series is based on a major national assembly of data on a wide range of indicators of sustainable forest management. SOFR is the only comprehensive compilation of national data and information on Australia's forests, and as such is the best available snapshot of the state of Australia's forests and the best presentation of trends over time.

2) Credible

The SOFR series is an authoritative and trusted source of information on Australia's forests. It has gained this status by presenting the best available data and information from national and state and territory sources. SOFR is authored by two committees (the Montréal Process Implementation Group for Australia, and the National Forest Inventory Steering Committee) each containing national and state and territory representatives, and published by ABARES, the research bureau of the Australian Government Department of Agriculture. The framework of criteria and indicators used in the SOFR series was developed under the international Montréal Process.

3) Consistent

SOFR is structured according to a consistent and systematic format under seven separate criteria of sustainable forest management, covering the biophysical, social, economic and policy aspects of forests. Within each of the seven criteria, various indicators (44 in total) address specific forest parameters and values. This framework remained unchanged between SOFR 2008 and SOFR 2013, and gives a familiar and easily navigated layout for the complex range of information and data presented. Repeated reporting against this consistent structure enables patterns and trends over time to be revealed.

4) Accessible

Each SOFR indicator contains sufficient explanatory narrative to allow the reader to understand the data being presented. The data and narratives are also summarised and synthesised into Key Points (for each indicator), Key Findings (for each criterion), and an Executive Summary. References, a glossary and an index are included at the end of the report.

5) Available

SOFR 1998, SOFR 2003, SOFR 2008 and SOFR 2013 are available at the Forests Australia website (www.daff.gov.au/forestsaustralia³) and the ABARES publications website (www.daff.gov.au/abares/publications⁴). SOFR 2013 and a separate Executive Summary are available in both pdf and accessible MsWord formats, as individual chapters as well as single documents, and are also available in hard copy. Key spatial datasets, including forest cover, forest type, forest tenure and Indigenous managed forests, have also been published.

Usage of the SOFR series

The SOFR series is a widely used resource for understanding the multiple values of Australia's forests, as well as the state of these values, and demonstrating progress in sustainable forest management. SOFR is of importance to, and serves the diverse purposes of, many different people and organisations throughout Australia and overseas, such as:

- Australian, state and territory government ministers
- Australian, state and territory government agencies, including regional development organisations
- parliamentary and other enquiries (SOFR 2008 was widely cited in a number of state and Australian Government parliamentary inquiries into forests and forest industries)
- policy-makers
- forest planners and natural resource management planners
- forest growers and managers
- forest industry and business managers, including in the processing, manufacturing and importing sectors, often during the preparation of proposals and business cases
- academia, researchers, consultants and forest industry analysts
- non-governmental organisations
- professional societies.

Benefits of producing the SOFR series

The comprehensive and consistent nature of the SOFR series described above, and the above wide range of users, leads to the following benefits of producing the SOFR series:

1) Informed policy and informed decision-making

SOFR directly assists policy-makers to develop sound future policies and programs in relation to sustainable forest management, access to forest resources, meeting market demand for forest products, effective forest conservation strategies, and community concerns with forest management.

2) Informed industry development and decision-making, regionally, nationally and internationally

The data and analyses presented in SOFR support the development of viable forest industries, and significantly improves the capacity to inform decision-makers about forest management in Australia.

3) Improved trade and market access

The publication of SOFR provides reassurance and confidence to local, national and international communities about the management of Australia's forests, and so builds support for continued access to forest resources and continued active forest management.

³ Now awe.gov.au/abares/forestsaustralia

⁴ Now awe.gov.au/abares/publications

4) Informed research and analysis by consultants and academics

SOFR provides a consistent, authoritative and comprehensive source of national forest-related data suitable for use in a wide variety of analyses for a wide range of purposes.

5) An informed community

Informing the broader community about the state of Australia's forests is the main legislative driver for preparing SOFR. The publication of SOFR ensures that community debate about the role and management of Australia's forests can be based on appropriate data, and raises community confidence in forest management. The general acceptance of the content of the SOFR series suggests that this has been achieved.

The broad range of forest values on which information is collected and reported in SOFR in an integrated fashion ensures that stakeholders, forest managers and decision-makers are aware of the connected nature of the ecological, biophysical, social and economic aspects of Australia's forests. Building this awareness of the diversity of values of Australia's forests improves the communication of the state of Australia's forests to the broader community, and informs the wider community debate.

Other outcomes from preparation and production of the SOFR series

1) Fulfils national legislative and policy obligations

The five-yearly SOFR series fulfils commitments under the Commonwealth *Regional Forest Agreements Act 2002* (RFA Act) and the *National Forest Policy Statement* (NFPS).

The RFA Act commits the Commonwealth Minister for forestry "to establish a comprehensive and publicly available source of information for national and regional monitoring and reporting in relation to all of Australia's forests; and to support decision-making in relation to all of Australia's forests".

The NFPS commits the nine signatory governments to provide through their forest management agencies "appropriate information from which to produce and publish a 'state of the forests' review every five years". The 'reviews' are to provide accountability to the community on the stewardship of forests and demonstrate ecologically sustainable forest management.

2) Efficient compilation of data

The formal structure of the Montréal Process framework of criteria and indicators facilitates collection and supply of data by the Australian, state and territory government agencies. The resultant national compilation of data leads to a greater understanding within jurisdictions of the purpose and importance of forest monitoring and reporting.

3) Efficient input into national reporting

The data and information in each of SOFR 1998, 2003, 2008 and 2013 have underpinned a number of national reporting processes and products. These include Australia's State of the Environment Reports, national environmental accounts, and other domestic reports. SOFR 2008 was widely cited in *Australia State of the Environment 2011*. SOFR is also the main source for non-economic forest-related data in the *Australia's Forests at a Glance* booklet series.

4) Efficient state and regional reporting

In addition to SOFR, Australia's Montréal Process criteria and indicator framework is adopted in several state reporting processes (Victoria's State of the Forests Report, Tasmania's State of the forests report, the New South Wales Seeing Reports, and the Western Australia Forest Management Plan) and for reporting against each Regional Forest Agreement. This alignment and common platform provides consistency in assembled information, and a shared approach for measuring and reporting forest

attributes. The connection between the state, national and international levels of reporting aligns data requirements, and increases the efficiency of producing each report.

5) Compatible with certification frameworks

The criteria and requirements in the Australian Forestry Standard (AFS) for forest management are constructed around the Montréal Process criteria that are used for reporting in the SOFR series. This provides AFS certification with a high-level linkage to the sustainability criteria adopted by Australia's states and territories, and allows consistent assessment and management of forest values.

6) Efficient international reporting

SOFR is Australia's key source for international forest reporting processes. This includes Australia's responses to the five-yearly Global Forest Resources Assessments led by the United Nations Food and Agriculture Organization for 2000, 2005, 2010 and 2015, which were based primarily on data and information from SOFR 1998, 2003, 2008 and 2013 respectively. Compilation of SOFR allows efficient responses to these international reporting requirements, as evidenced by no additional requests for data from state and territory governments being necessary to prepare these responses.

The preparation of SOFR using Australia's Montréal Process criteria and indicator structure also enables SOFR to serve as Australia's country report to the international *Montréal Process Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests*, of which Australia is a founding member.

The SOFR series has also been the source for responses to requests for national forest information from the United Nations Forum on Forests, the Convention of Biological Diversity, and other requesters.

Recognition of benefits

At its release the Hon. Richard Colbeck, Parliamentary Secretary to the Minister for Agriculture described SOFR 2013 as:

"a huge resource for people in the forestry industry"

"a message for the broader community"

and, in regard to sustainable forest management,

"a benchmark for what's published around the world".

A wide set of accolades have subsequently been documented from the SOFR user community. Examples include:

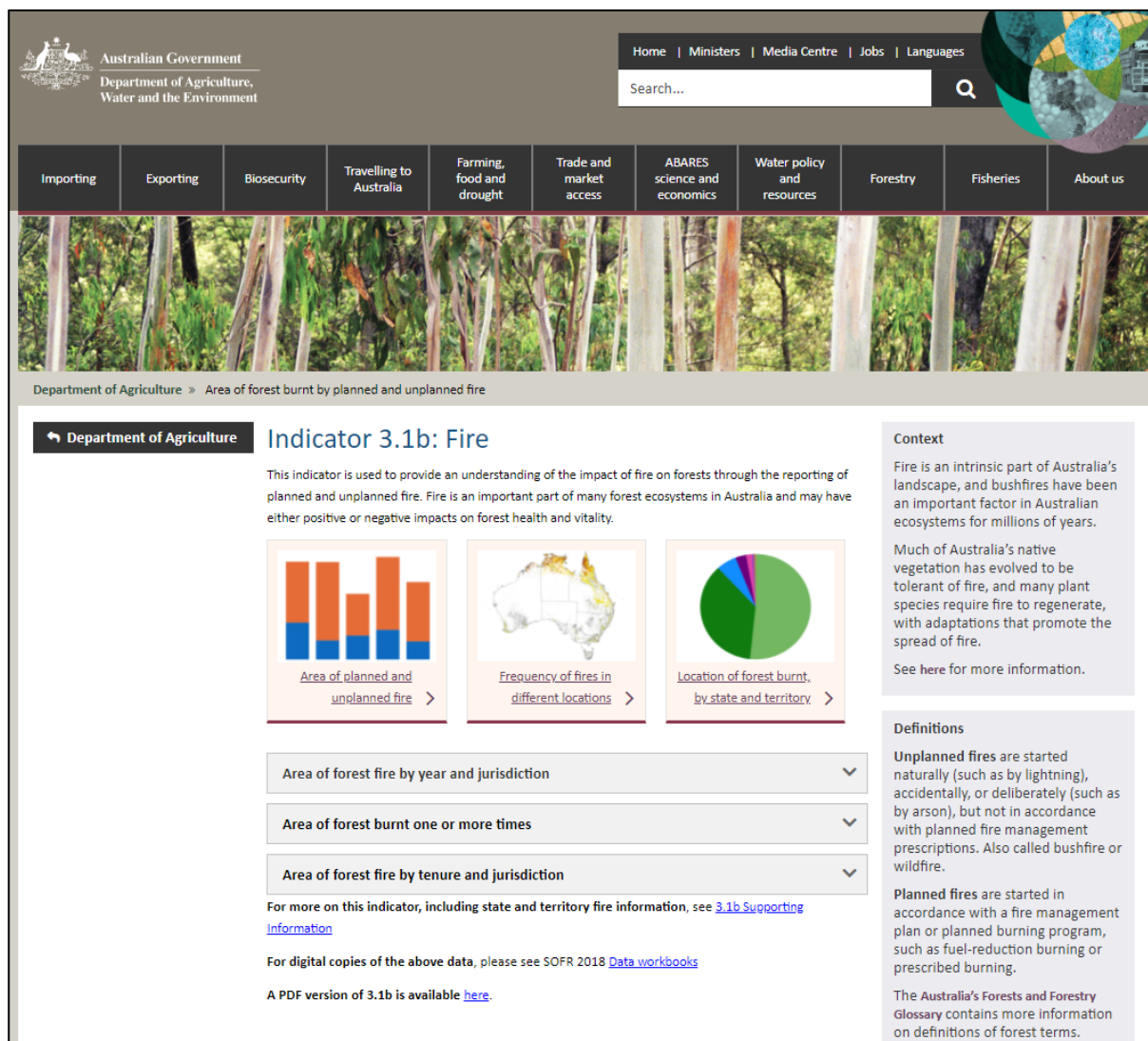
"Just wanted to say how great it's been having the 2013 SOFR. I've referred to the report and the online version for various bits of research in the last month. A great reference all round" (from a Senior Planning Officer in a state Environmental Protection Agency),

"as comprehensive and informative a document as ever" (from a senior academic), and

"excellent report produced by your country" (from the National Sustainability Program Leader in an overseas Forest Service).

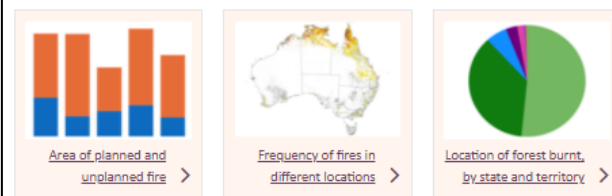
The national forest cover and forest type spatial datasets in the National Forest Inventory have been identified by the Australian Bureau of Statistics as an Essential Statistical Asset, and are foundation spatial datasets in the land cover component of ANZLIC – the Spatial Information Council.

Appendix B: Possible web-based format for Indicator 3.1b



Indicator 3.1b: Area of forest burnt by planned and unplanned fire

This indicator is used to provide an understanding of the impact of fire on forests through the reporting of planned and unplanned fire. Fire is an important part of many forest ecosystems in Australia and may have either positive or negative impacts on forest health and vitality.

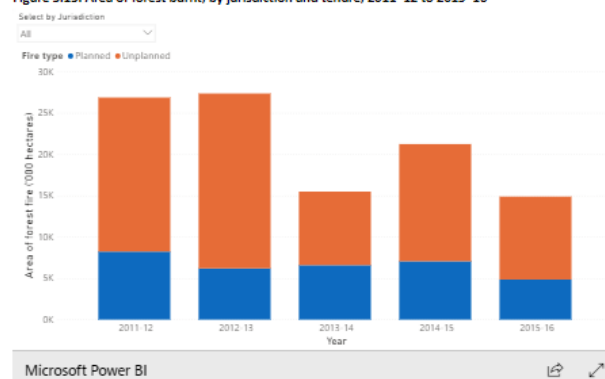


Area of forest fire by year and jurisdiction

The area of fire in forest over the period 2011–12 to 2015–16, by jurisdiction, is shown in Figure 3.13, separately by planned and unplanned fire. The national area of fire in forest varied from 14.9 million hectares in 2015–16, to 27.4 million hectares in 2012–13.

The area of unplanned fire in forest was highest for 2011–12 and 2012–13, these annual areas being more than twice the area burnt by unplanned fire in 2013–14. In contrast, the annual area of planned fire in forest remained relatively constant over these years. Overall, these trends are driven by differences in fire areas between years in northern Australia.

Figure 3.13: Area of forest burnt, by jurisdiction and tenure, 2011–12 to 2015–16



To view fires by jurisdiction, select jurisdiction from drop down. Hover over bars in figure for exact values

For a digital copy of the above data and figure, please see [Data workbooks](#)

Summing the fire area figures for individual years over the period 2011–12 to 2015–16 gives the cumulative area of fire in forest over this period as 106 million hectares (Table 3.6, [Supplementary webpage](#)).

Forest areas that are burnt on multiple occasions during the 5-year reporting period are counted

Context

Fire is an intrinsic part of Australia's landscape, and bushfires have been an important factor in Australian ecosystems for millions of years.

Much of Australia's native vegetation has evolved to be tolerant of fire, and many plant species require fire to regenerate, with adaptations that promote the spread of fire.

See the Indicator 3.1b supporting information webpage for more information.

Definitions

Unplanned fires are started naturally (such as by lightning), accidentally, or deliberately (such as by arson), but not in accordance with planned fire management prescriptions. Also called bushfire or wildfire.

Planned fires are started in accordance with a fire management plan or planned burning program, such as fuel-reduction burning or prescribed burning.

The Australia's Forests and Forestry Glossary contains more information on definitions of forest terms.

Indicator 3.1b: Area of forest burnt by planned and unplanned fire

This indicator is used to provide an understanding of the impact of fire on forests through the reporting of planned and unplanned fire. Fire is an important part of many forest ecosystems in Australia and may have either positive or negative impacts on forest health and vitality.

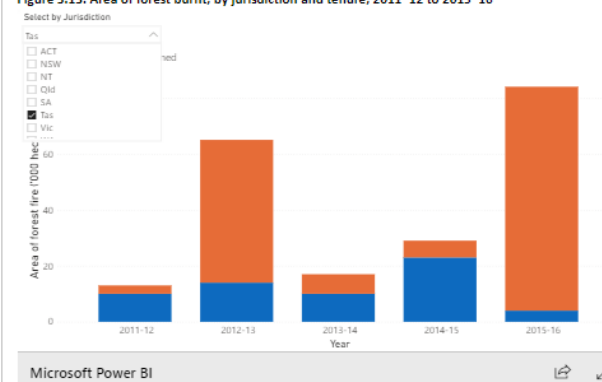


Area of forest fire by year and jurisdiction

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Figure 3.13: Area of forest burnt, by jurisdiction and tenure, 2011–12 to 2015–16



To view fires by jurisdiction, select jurisdiction from drop down. Hover over bars in figure for exact values

For a digital copy of the above data and figure, please see [Data workbooks](#)

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Forest areas that are burnt on multiple occasions during the 5-year reporting period are counted

Context

Fire is an intrinsic part of Australia's landscape, and bushfires have been an important factor in Australian ecosystems for millions of years.

Much of Australia's native vegetation has evolved to be tolerant of fire, and many plant species require fire to regenerate, with adaptations that promote the spread of fire.

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Definitions

Unplanned fires are started naturally (such as by lightning), accidentally, or deliberately (such as by arson), but not in accordance with planned fire management prescriptions. Also called bushfire or wildfire.

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Indicator 3.1b: Area of forest burnt by planned and unplanned fire

This indicator is used to provide an understanding of the impact of fire on forests through the reporting of planned and unplanned fire. Fire is an important part of many forest ecosystems in Australia and may have either positive or negative impacts on forest health and vitality.



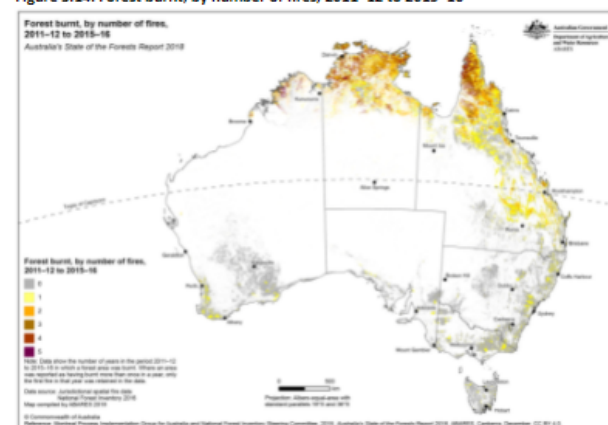
Area of forest fire by year and jurisdiction

Area of forest burnt one or more times

Spatial analysis of the fire areas in the individual years of the five-year reporting period 2011–12 to 2015–16 showed that most areas of forest burnt in southern Australia burnt only once during this period. On the other hand, large areas of forest were burnt multiple times during this reporting period, especially in northern Australia.

Figure 3.14 shows the distribution of burnt forest in Australia by the number of times each hectare was burnt in the period 2011–12 to 2015–16.

Figure 3.14: Forest burnt, by number of fires, 2011–12 to 2015–16



Note: Fire frequency is the number of years in the five-year reporting period in which a forest area was reported as being burnt. Occasionally, an area was reported as having burnt more than once in a year; in such situations, only the first fire in that year was retained in the data.

For a higher definition version of this map, click [here](#)

Area of forest fire by tenure and jurisdiction

For more on this indicator, including state and territory fire information, see [3.1b Supporting Information](#)

Context

Fire is an intrinsic part of Australia's landscape, and bushfires have been an important factor in Australian ecosystems for millions of years.

Much of Australia's native vegetation has evolved to be tolerant of fire, and many plant species require fire to regenerate, with adaptations that promote the spread of fire.

See the Indicator 3.1b supporting information webpage for more information.

Definitions

Unplanned fires are started naturally (such as by lightning), accidentally, or deliberately (such as by arson), but not in accordance with planned fire management prescriptions. Also called bushfire or wildfire.

Planned fires are started in accordance with a fire management plan or planned burning program, such as fuel-reduction burning or prescribed burning.

The Australia's Forests and Forestry Glossary contains more information on definitions of forest terms.

Indicator 3.1b: Area of forest burnt by planned and unplanned fire

This indicator is used to provide an understanding of the impact of fire on forests through the reporting of planned and unplanned fire. Fire is an important part of many forest ecosystems in Australia and may have either positive or negative impacts on forest health and vitality.



Area of forest fire by year and jurisdiction

Area of forest burnt one or more times

Area of forest fire by tenure and jurisdiction

When fire areas burnt in multiple years are allowed for, the total area of forest that was burnt once or more in the period 2011–12 to 2015–16 is 54.8 million hectares.

Of this forest area that experienced fire in this period, the largest areas by jurisdiction were in Queensland (28.3 million hectares) and the Northern Territory (20.0 million hectares). Of this forest area that experienced fire in this period, the largest areas by tenure were in leasehold forest (23.9 million hectares) and private forest (20.1 million hectares). Most fires in southern Australia occurred in nature conservation reserves, whereas most fires in northern Australia occurred in leasehold or private forest.

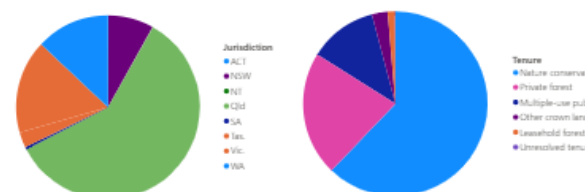
Table 3.9: Area of forest burnt, by jurisdiction and tenure, 2011–12 to 2015–16

Select tenure to view breakdown by state

Select jurisdiction from drop-down to view breakdown by tenure

Multiple-use public forest

NT



Microsoft Power BI

To view fires by tenure type within jurisdictions, select tenure at the bottom of the figure. Select tenure from dropdown to view breakdown by state. Hover over sections of pie chart for exact values

For a digital copy of the above data and figure, please see [Data workbooks](#)

Of the total forest area of 55 million hectares burnt in this period, a majority (50 million hectares, 91%) occurred in northern Australia (the Northern Territory, Queensland, and Western Australia)

Context

Fire is an intrinsic part of Australia's landscape, and bushfires have been an important factor in Australian ecosystems for millions of years.

Much of Australia's native vegetation has evolved to be tolerant of fire, and many plant species require fire to regenerate, with adaptations that promote the spread of fire.


See the Indicator 3.1b supporting information webpage for more information.

Definitions

Unplanned fires are started naturally (such as by lightning), accidentally, or deliberately (such as by arson), but not in accordance with planned fire management prescriptions. Also called bushfire or wildfire.

Planned fires are started in accordance with a fire management plan or planned burning program, such as fuel-reduction burning or prescribed burning.

The Australia's Forests and Forestry Glossary contains more information on definitions of forest terms.





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3.1b: Supporting Information

Indicator 3.1b: Area of forest burnt by planned and unplanned fires

This indicator reports on the area of forest burnt by planned or unplanned fires in the five years of the period 2011–12 to 2015–16. Monthly fire data are collated and reported annually, by financial year. The data are then reported both as the cumulative area of forest fire in the five-year period, and as the total area of forest burnt during the period.

The cumulative area of fire in forest in the five-year period is the sum of the annual forest fire area totals. Some areas of forest burnt in multiple years of the reporting period, and thus over a five-year period the cumulative area of fire in forest substantially exceeds the total area of forest that experienced fire. Over many years, the cumulative area of fire in forest would exceed the total area of forest in a region.

For SOFR 2018, this indicator therefore also reports the total area of forest burnt one or more times during the period, a metric that counts an area of burnt forest only once no matter how many times it burns in a reporting period. The total area of forest burnt can never exceed the total area of forest in a region.

Where and when do bushfires occur?

Policy and coordination of fire management in Australia

Planned and unplanned fires in Australia

Determining the extent of fire in Australia's forests: data sources and analysis

Area of forest burnt one or more times

Appendix C: Assessment for ongoing reporting of metrics in Indicator 3.1b of SOFR 2018

This table assesses the metrics (tables and figures) published in SOFR 2018 indicator 3.1b, in the context of planned ongoing web-first reporting.

Each metric (table and figure) from SOFR 2018 was designated as **key content**, **supporting information**, **may or may not be reported**, or **no longer to be reported**.

Key content is proposed to be reported on a main indicator webpage, with supporting information on a secondary webpage. Case studies could have an individual webpage, and could be updated on a separate schedule.

Criteria used in the assessment of metrics were national relevance, availability of source data, and availability of data showing trends over time.

SOFR 2018 metric (table or figure)		Future reporting	Significant for national reporting?	Source of data	Data show trends over time?	Possible frequency of update	Comments
CRITERION 3: Maintenance of ecosystem health and vitality							
Indicator 3.1b Area of forest burnt by planned and unplanned fire							
Table 3.9	Area of forest burnt, by jurisdiction and tenure, 2011–12 to 2015–16	Key	Yes	States & Territories (S&T) plus ABARES Multiple Lines of Evidence (MLE) forest cover estimation	Yes – for fire areas now that these are collected consistently.	2-yearly	Key data or areas and frequencies
Figure 3.13	Area of planned and unplanned forest fire ('000 hectares) by year	Key	Yes		No – for spatial forest area from MLE		
Figure 3.14 MAP	Forest burnt, by number of fires, 2011–12 to 2015–16	Key	Yes				
Figure 3.15 MAP	Forest burnt, 2011–12 to 2015–16, by planned, unplanned, or both planned and unplanned fire	Key	Yes				

SOFR 2018 metric (table or figure)		Future reporting	Significant for national reporting?	Source of data	Data show trends over time?	Possible frequency of update	Comments
Table 3.6	Area of forest fire, 2011–12 to 2015–16, by year and jurisdiction, separately for planned and unplanned fire ('000 hectares)	Supporting	Yes	S&T plus MLE	Yes – for fire areas. No – for spatial forest area from MLE	2-yearly	Combine with Table 3.8
Table 3.8	Cumulative area of fire in forest, 2011–12 to 2015–16, by tenure and jurisdiction, separately for planned and unplanned fire	Supporting	Yes				Combine with Table 3.6
Table 3.7	Area of forest burnt by number of times burnt, by jurisdiction, 2011–12 to 2015–16 ('000 hectares)	Supporting	Yes	MLE		2-yearly	
Figure 3.12	Distribution of bushfire seasonality across Australia	Yes (image)	Yes, valuable context	Geoscience Australia	n/a	n/a	Retain but do not update
Figure 3.16	Cumulative area of planned and unplanned forest fire by tenure, 2011–12 to 2015–16	No	Yes	MLE	No – not for MLE data	n/a	Represented in Table 3.8
Figure 3.17	Widespread mortality of the above-ground parts of mature <i>Eucalyptus megacarpa</i> and <i>E. patens</i> in severely burnt forest near Willowdale	No	No	n/a – image	n/a	n/a	Case study. Can replace with a new case study at an appropriate moment, independent from data updates
Figure 3.18	Immediate impact of severe fire in young forest rehabilitated following bauxite mining near Mt William, Western Australia	No	No	n/a – image	n/a	n/a	
Figure 3.19	Plantation of <i>Pinus pinaster</i> burnt by high intensity crown fire	No	No	n/a – image	n/a	n/a	
Figure 3.20	Pyrocumulonimbus cloud above the Waroona fire	No	No	n/a – image	n/a	n/a	