

ENVIRONMENT REFORM MUST INCLUDE A 'BIODIVERSITY BOM'



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OVERVIEW

- The Australian Academy of Science welcomes the interim report of the independent review of the EPBC Act, and supports its implementation in full.
- Australia's monitoring of biodiversity, collection of data, and data curation and standards are inadequate and in pressing need of reform.
- The Academy considers that now is time to establish a new national biodiversity information system, led by an independent agency (similar to the Bureau of Meteorology (BOM) but focused on biodiversity), to integrate data and tools, support decision-makers and ensure public confidence. The agency would need to have a legislative mandate, curate data, work with states and be empowered to enforce national environmental data standards.
- Such an agency would independently observe, analyse, forecast and warn on the state and trends of Australia's biodiversity in a similar manner to the services the Bureau of Meteorology provides on Australia's weather and climate.

On every available measure, Australia is failing to halt, slow or reverse biodiversity loss and species decline. As Professor Samuel's interim report has observed, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is part of the problem.¹

The government is progressing the Environment Protection and Biodiversity Conservation Amendment (Streamlining Environmental Approvals) Bill 2020 through parliament, arguing that this legislation forms part of phase one of Professor Samuel's proposal for reform.² The amendments are described as the first tranche of reforms associated with the legislative review of the Act.

The Australian Academy of Science welcomes the interim findings of the Samuel review. The Academy holds that all the recommended elements—national environmental standards, scientific evidence through high-quality data and analysis tools, and robust and independent assurance systems—are essential to ensure that devolved decision-making retains the confidence of the Australian people. The report outlines a comprehensive program for reform and should be pursued systematically and in full.

In this context, parliamentary scrutiny to understand the implications of the Environment Protection and Biodiversity Conservation Amendment (Streamlining Environmental Approvals) Bill 2020 and the Australian Government's plan for the implementation of the Samuel report is important.

A key plank of Samuel's interim report is the establishment of a national environmental data custodian, or a biodiversity information agency.

ENVIRONMENTAL DATA SYSTEMS NEED RADICAL REFORM

Many organisations, government entities, researchers and businesses collect environmental information. There are many sources of data, but no national, authoritative body with a direct mandate to observe, analyse or forecast environmental information in a form that aids decision-making, ensures compliance and reduces risks under the EPBC Act. Numerous studies have also noted gaps in monitoring data, especially terrestrial information.³⁻⁷

Inability to access the required data promptly is a significant impediment to the effective operation of environmental regulation in Australia.⁸ Data systems are fragmented, analysis is lacking, the right information is not available to regulators, and the Australian Government's information technology needs a substantial overhaul.¹ In addition, skilled analysts dedicated to providing the required information are not embedded in the system.

There is no single national source of truth that people can rely on. This adds cost for businesses and governments, as they collect and re-collect the information they need.

— GRAEME SAMUEL, INTERIM REPORT, P.72

Australia has made significant investments in environmental science research and elements of information systems, yet despite these efforts our data and monitoring of biodiversity remains inadequate. All too often, environmental data is stuck between different departments or levels of government, behind the shield of commercial-in-confidence, or in inadequate information systems, and is out of date.

The required national-level data and analyses should be funded, planned cohesively with states and territories, and shared efficiently across local, state and federal scales.

The governance, accessibility, evaluation and monitoring of Australia's biodiversity information and data are broken. This is an unacceptable situation, one that is not tolerated in other domains such as weather information, biosecurity, health and welfare.

Establishing, resourcing and using baseline biodiversity data will enable better economic and environmental outcomes, decrease evaluation times, remove duplication of effort, and make forecasting and reporting more efficient by developing common modelling approaches. Other benefits include, for example, enabling access to international markets for biodiversity certification for landholders, or stewardship payments to landholders.^{9,10} Industry-led initiatives and codes, such as the Australian Beef Sustainability Framework, can be made more effective through better provision of more relevant data¹¹ (see box, right).

Anticipated economic benefits of a reformed, devolved and streamlined EPBC Act require nationally consistent and comprehensive data and information systems

TIME TO ESTABLISH A BIODIVERSITY INFORMATION AGENCY

All decisions made under the EPBC Act require scientific evidence backed by reliable data. A transparent, accountable evidence base calls for data to be collected according to common requirements and standards, interpreted and reported, and for that information to be publicly available.* This requires an agency with a legislated mandate.

There is currently no such multi-scale approach, nationally, to creating a data-focused evidence base for transparent and accountable EPBC Act decisions. The three elements of reform are (1) establishing a national environmental analysis body (a 'Biodiversity BOM'), (2) implementing national data standards, and (3) developing nationally consistent transparency of evidence.

1. ESTABLISH AN ENVIRONMENTAL DATA, INFORMATION AND ANALYSIS AGENCY—A 'BIODIVERSITY BOM'

Australian scientists have led the world in developing systems and tools for biodiversity data collection, analytics and decision-support. The latter can explicitly account for the ecological, social and economic benefits, costs and feasibility of actions, budgetary constraints, and uncertainty. Despite this, we do not have a nationally integrated biodiversity information system or agency. While yielding valuable insights and technology, the current start–stop model in investment is inefficient in translating to the needs outlined by the Samuel report.

BUSHFIRE RESPONSE HINDERED BY INEFFICIENT DATA

Following the Black Summer bushfires, an Expert Panel was convened to assist in prioritising recovery actions for native species, ecological communities, natural assets and their cultural values for Indigenous Australians affected by last summer's extreme fire events.

The Expert Panel was tasked with informing further delivery of the Australian Government's response to the fires, including priority emergency actions to support impacted animals, plants and ecosystems, as well as medium- and long-term responses required to support the recovery of Australia's environment.

The work of the Expert Panel was hindered by barriers to obtaining essential information to inform their work:

- There is no centralised database with up-to-date information on the distribution of these environmental assets, much of which is collected by the states.
- There is no national approach for collecting and displaying information on fire extent and fire severity.
- Information on extent and severity was collected by different agencies using varying methods, to varying resolution and accuracy, making it very hard to standardise across jurisdictions.

If these data had been collected in accordance with national standards and held by a national custodian, the work of the Expert Panel would have enhanced and enabled a more efficient and effective response to conserve and recover Australia's precious environmental assets.

Investment in an overarching independent agency for data compilation, analysis and curation is critical to ensure that decision-makers across all jurisdictions have access to the best available information, that monitoring of biodiversity is ongoing, and that national environmental standards can be seen to be met.

A national environmental data, information and analysis agency would have a mission of managing risk by observing, analysing, forecasting and warning. This is similar to the mandate given to the Bureau of Meteorology, but for the protection of the environment and meeting Australia's international obligations. For instance, such an institution could take ownership of national state of the environment reporting.

* Or made accessible according to the FAIR (Findable, Accessible, Interoperable and Reusable) principles. For example, there may be a case for not wanting information about the location of a particular threatened species to be publicly available.
<https://ardc.edu.au/resources/working-with-data/fair-data/>

THE 'BIODIVERSITY BOM'

The proposed 'Biodiversity BOM' should support a national environmental data and information system that will:

- ensure that the outcomes specified in national environmental standards are met and are transparent
- build on previous and ongoing investments in environmental data, systems and tools
- incorporate data from proponents, agencies and researchers, but must be underpinned by scientifically robust monitoring and local to regional scales
- substantially improve cost-effectiveness in ensuring common systems and standards across jurisdictions and by avoiding the inefficiency of start–stop investment in environmental information systems
- support broader social and economic outcomes, including investment in sustainable agriculture and improved access of produce to international markets
- require substantial and sustained investment from the Australian Government to be fit-for-purpose.

The national environmental data and information system should be supported by a independent and legislated agency that is responsible for, and has ownership of, this system. This agency should have the following characteristics:

- trusted by stakeholders
- arms-length from the decision-making process
- an environmental intelligence mindset
- able to commission and utilise research outputs and transform them into operational services
- technical competencies in environmental sciences, data management, data analysis and modelling
- cooperative and enabling relationships with state and territory biodiversity agencies
- capabilities in software and systems development and maintenance
- ability to manage secure and resilient IT infrastructure.

It would be responsible for the development of relevant data and analysis tools that are effective in summarising and visualising data, models and analyses, making them interpretable to the intended audiences and enabling scenario testing.

Statisticians and data scientists must be embedded at all stages of data collection, analysis, evaluation, implementation, monitoring and reporting. People skilled in structured decision-making are also critical, since the conservation pathway for threatened species

has many decision points that need logical, clear and transparent decisions.

Reform in establishing this body would create highly skilled jobs, increase efficiency and national capability, and ensure that those charged with making decisions under the EPBC Act are using the best available science.

Reform would build on previous work on a National Plan for Environmental Information initiative.¹²

There are also some international examples of this approach, such as the European Environment Agency, and Parks Canada. An initial first step should be to refresh the international mapping undertaken by the 2012 independent review of environmental information activity.¹³

2. ESTABLISH NATIONAL DATA STANDARDS

National environmental data standards are essential for establishing baselines, identifying changes and trends, and evaluating impacts. They underpin scientific, accountable approaches to monitoring, reporting and decision making. Data standards also improve cost efficiency by focusing on collecting essential data and avoiding wasted time and effort, thereby enabling greater impact from the initial investment. Consistent protocols that can be deployed across different regions to enhance the evaluation of cumulative impacts can provide faster and more accurate information about the effect of potential decisions. The lack of such consistent data has, for example, exacerbated conflict around the status of koala populations.

The standards need to be sufficiently flexible to suit the full range of biodiversity, from the small (fungi, insects) to the large (trees and vertebrates), and across threatening processes. They also need to be relevant and implementable at national, state, regional and local spatial scales, and to enable measurement of cumulative impacts at regional or larger scales.

Given rapid changes in methods for biodiversity monitoring, including developments in remote sensing, acoustic monitoring, drones, camera traps and DNA sequencing, standards need to be reviewed regularly to ensure state-of-the-art data collection, reporting and storage.

3. ESTABLISH TRANSPARENT DECISION-MAKING PROTOCOLS

Data analysis and supporting tools need to sit within a statistically sound and structured decision-making process to inform and support transparent and accountable decisions.

These processes are critical to support ecological risk assessments, listing, and development and implementation of recovery plans. Critically, they are important for communicating the process and justification for decision outcomes with stakeholders in highly contested contexts.

Sound decisions will depend on the development of national guidance and use of structured decision-making protocols that account for environmental

and social benefits, costs and feasibility of actions. Empirical, expert-elicited, and modelled data will be necessary to estimate and evaluate the consequences of different development or management options.

Investment in EPBC Act decision-making protocols will allow consistent decisions across authorities. This will substantially increase the transparency, accountability and efficiency of these decisions.

MAKING THE MOST OF AUSTRALIA'S CAPABILITIES

Reform through the establishment of a national biodiversity information agency that provides national data standards and independent data analysis and

decision-making protocols, will provide the support structure necessary for the EPBC Act to achieve its goals in a transparent and accountable manner at national, regional and local levels.

Alongside reforms to ensure that a national data custodian (the 'Biodiversity BOM') can access data from all levels of government, researchers and business, the Academy recommends the establishment of an effective national environmental data and information system to enable the implementation of Professor Samuel's proposed reforms and contribution to reversing Australia's lamentable record for biodiversity destruction.

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