



An Ecological Knowledge System to support nature repair in Australia

The Ecological Knowledge System (EKS) delivers information about biodiversity and management options to support the Nature Repair Market. The EKS helps market participants to design projects and assess potential biodiversity benefits, as well as helping investors to compare the benefits of different projects.

The *Nature Repair Act 2023* came into effect on 15 December 2023 establishing a framework for a voluntary national biodiversity market where individuals and organisations can undertake nature repair projects and attract investors. It enables people to take action to restore and protect the environment. Improving access to high integrity environmental information is key to the success of the Nature Repair Market.

What is the EKS?

The EKS is a collaborative partnership between CSIRO and the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW). The EKS integrates national data with regional information and expertise to support biodiversity assessment and management at local scales. The EKS is funded by DCCEEW.



The EKS gives market participants access to ecological information to support the design of their biodiversity projects.
Source: G. Wiehl, CSIRO.

Key components of the EKS include:

- **Ecosystem models:** State and transition models (STMs) are used to synthesise knowledge about the dynamics and management options for different ecosystem types. STMs can be used in project planning to identify current ecosystem states and condition. These may range from highly modified states with low condition and low levels of biodiversity, to 'reference' states with very high condition and high levels of biodiversity. STMs also describe the actions that are required to improve ecosystem condition by restoring structure, function, and composition. Experts provide advice, knowledge, and data to create STMs that reflect regional ecosystem dynamics.
- **National Biodiversity Assessment System (NBAS):** The NBAS supports market participants to compare potential biodiversity benefits of projects using a nationally consistent approach. NBAS integrates information from the ecosystem models, together with on-ground project data, and national spatial datasets to assess a project site's current contribution to conserving biodiversity and forecasts the biodiversity benefits expected to result from project activities. This includes how the project is expected to improve the local condition of ecosystems. Broader biodiversity benefits include the contribution to landscape connectivity and the protection and restoration of rare or highly depleted ecosystems. These factors are considered together to assess a project's contribution to the persistence of biodiversity.

- **First Nations knowledge, values and data:** CSIRO and DCCEEW recognise the important roles of First Nations peoples¹ as Traditional Owners and knowledge holders. CSIRO and DCCEEW are working together with First Nations representatives on the co-design of a framework to inform and guide how Indigenous knowledge and values could appropriately interact with the EKS. The approach is underpinned by a commitment to the principles of free, prior and informed consent at each stage of engagement and communication, and recognition of the importance of data sovereignty for First Nations people.

1 This term is inclusive of Aboriginal and Torres Strait Islander peoples, Indigenous Australians, Traditional Owners and Traditional Custodians

How does the EKS support the market?

The EKS initially focuses on providing ecosystem information and functions that support the market's first method. The EKS provides participants in the market with information about:

- the current biodiversity status of a proposed project area (e.g. ecosystem condition and current contribution to the persistence of biodiversity)
- the management actions needed to maintain and improve ecosystem condition
- the expected biodiversity benefits from implementing management actions.

For project planning, the EKS can be accessed using the web-based Platform for Land and Nature Repair (PLANR) at <https://planr.gov.au/>.

Next steps for the EKS

The EKS has been designed to support a range of methods as they are developed and to enable continuous improvement as the market evolves, knowledge improves and technology changes over time.

Work is planned to consider how to incorporate information about likely futures under climate change and how the approaches used in the EKS could be adapted and applied in coastal and marine systems.



It is intended that the EKS is continuously improved and gradually expanded to increase coverage across Australia.

Source: Kate Giljohann, CSIRO.

Further information

To learn more about the EKS and the Nature Repair Market, see the following sources:

- [EKS website \(CSIRO\) – An Ecological Knowledge System for the Nature Repair Market - CSIRO](#)
- [EKS Technical report](#)
- [PLANR](#)
- [Nature Repair Market - DCCEEW](#)

Acknowledgement of Country

The CSIRO and Department of Climate Change, Energy, the Environment and Water acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters, and culture. We pay our respects to their Elders past and present.



Corridor revegetation plantings near Molong, NSW. *Source: Suzanne Prober, CSIRO.*

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