Measuring the Impacts of Mining: Environmental, Ecological, and Economic Perspectives

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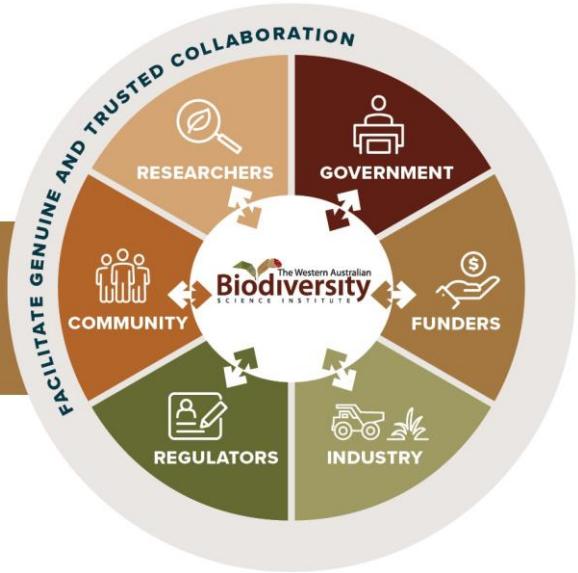
Who we are



- We are an independent, collaboration mechanism.
- We facilitate end user driven, relevant research.

CSIRO

Curtin University

ECU Australia EDITH COWAN UNIVERSITY

Murdoch University

The University of Western Australia

Western Australian Museum

Department of Biodiversity, Conservation and Attractions

Department of Primary Industries and Regional Development

Government of Western Australia
Department of Jobs, Tourism, Science and Innovation

Government of Western Australia
Department of Mines, Industry Regulation and Safety

Government of Western Australia
Department of Water and Environmental Regulation

Biodiversity loss and climate change mutually reinforce each other, and neither will be successfully resolved unless tackled together.

More than half of the world's economic output is moderately or highly dependent on nature and there is growing recognition in the finance and business sector of the need to move beyond climate considerations and address nature-related concerns.

Figure 1: The 'value' of biodiversity

Benefit category	Benefit type	Specific benefit description	Estimated value in 2050
Direct value (Financial flows to biodiversity)	Investment	Private biodiversity, conservation and natural capital investments	$78 bn
		Sustainable commodities	$5 bn
	Expenditure	Conservation NGOs and environmental charities	$11 bn
		Government expenditure and subsidies	$8.5 bn
	Market-based instrument transactions	Environmental water trading	$1.6 bn
		Forest carbon offsets	$24 bn
		Biodiversity offsets	$9 bn
Indirect-use values		Carbon co-benefits	
		Nutrient cycling	
		Flood prevention	
		Water cycle	
		Pollination by bees	
		Prevention of soil erosion	
		Air purification	
Non-use values		Existence values	
		Bequest values	

Note ^ The direct value of financial flows to biodiversity is represented by financial flows to biodiversity, appropriated from the OECD's Global Biodiversity Finance estimation methodology (2020). This has been measured using the OECD framework for the value of biodiversity and the OECD's Global Biodiversity Finance estimation methodology.

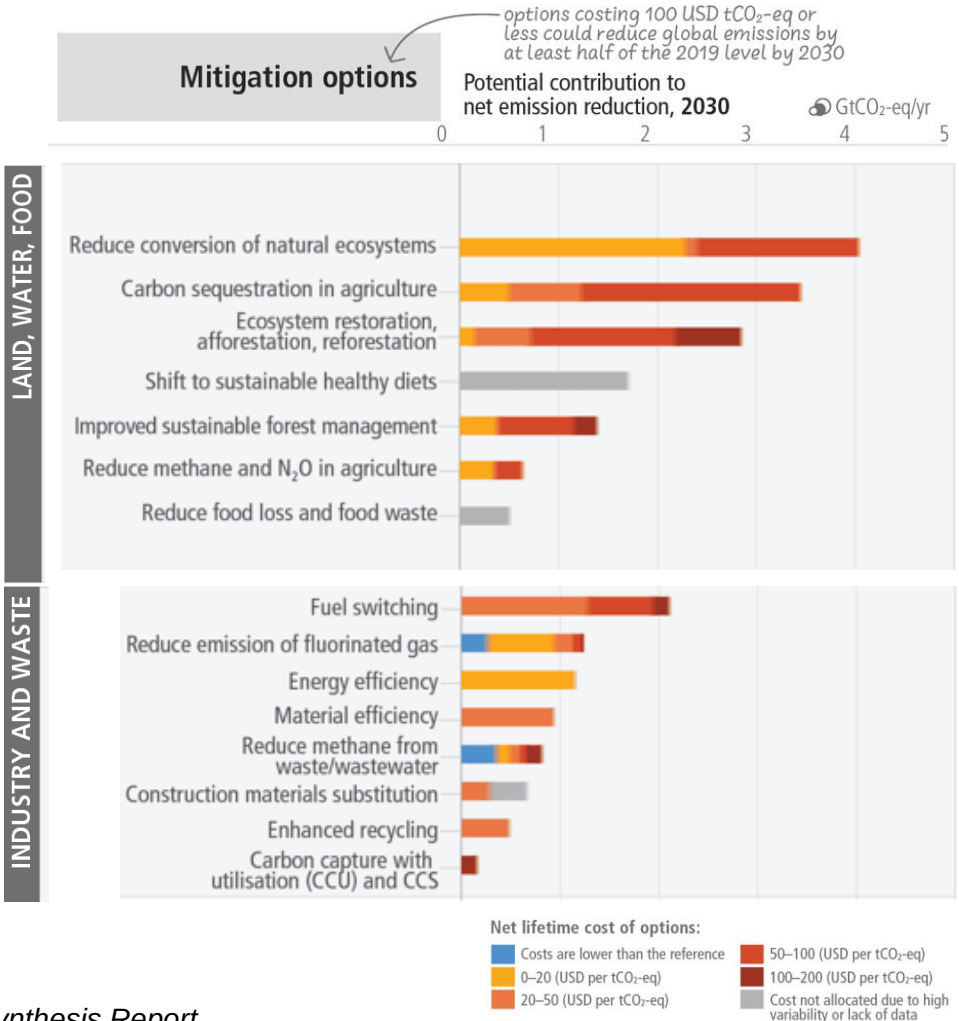
PwC Australia | The value of an Australian biodiversity market

World Economic Forum. 2020. Nature Risk Rising.

'The IPCC 6th Assessment offers a clear way forward in "climate-resilient development", which seeks win-win solutions to reduce or avoid greenhouse gas emissions at the same time as improving quality of life.'

Prof Andy Turner, University of Reading

There are multiple opportunities for scaling up climate action



IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report.

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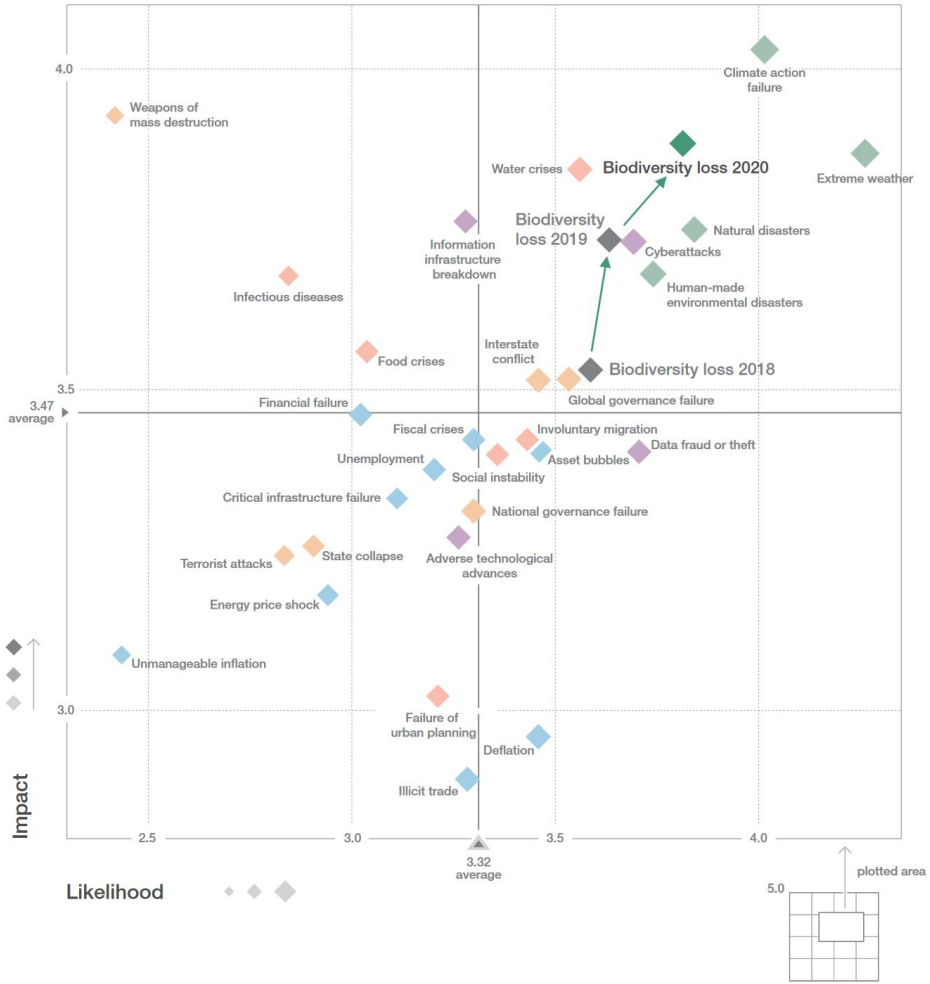
The global risks landscape 2020 and the evolution of the biodiversity loss risk in the past three years



World Economic Forum. 2020. Nature Risk Rising.

ICMM works towards 'nature-positive' mining

3RD MARCH 2023 BY: LEAH SHELENE ASARAM - FEATURES REPORTER

HAYLEY ZIPP If a number of mining companies followed suit, the scale of our contribution towards the restoration targets of the GBF would be substantial
Photo by: UN Biodiversity flikr account

With members further pledging to never conduct mining activities in designated World Heritage Sites, ICMM environment director **Hayley Zipp** adds that the mining industry has become cognisant of the critical role it can play in supporting the ambitions of the Global Biodiversity Framework (GBF).

Moreover, Zipp says some ICMM members have already set nature-positive targets, noting that diversified resources companies Teck, BHP and others such as aluminium producer Alcoa, and gold miner AngloGold Ashanti, are taking nature-positive actions such as investing in sustainable and innovative strategies to restore, regenerate and rehabilitate the environment.

"Supporting the TNFD pilot process is a key next step on the journey to creating a global standardised approach for monitoring, measuring and disclosing nature-related performance and dependencies."

CRC TiME
Transformations in Mining Economies

Natural capital accounting in the mining sector (Project 2.7)

Summary

CRC TiME, the Australian Government Department of Climate Change, Energy, the Environment and Water and CSIRO are working together to support natural capital accounting across the mining sector.

Funded by the Australian Government, the project involves:

- Developing a roadmap and business case to support mainstreaming of natural capital accounting across the sector.
- Trialling natural capital accounts at four sites to understand how current or future data collection can complement state and national data for natural capital accounts.
- Testing usability of resulting accounts within the Taskforce on Nature-related financial Disclosures beta framework.

Through these activities, the project will inform a consistent, efficient and effective approach to natural capital accounting in Australia's mining sector. Doing so will enable greater adoption, help to meet increasing disclosure expectations and support improved biodiversity and conservation outcomes.

Project Partners

Department of Climate Change, Energy, the Environment and Water, CSIRO, Curtin University, Murdoch University, Minerals Council of Australia, BHP, Alcoa, Digital Finance CRC, Western Australian Biodiversity Science Institute

TNFD

Supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.

- Beta v0.4 28 March, including draft metrics
- Final TNFD framework release Sep 2023

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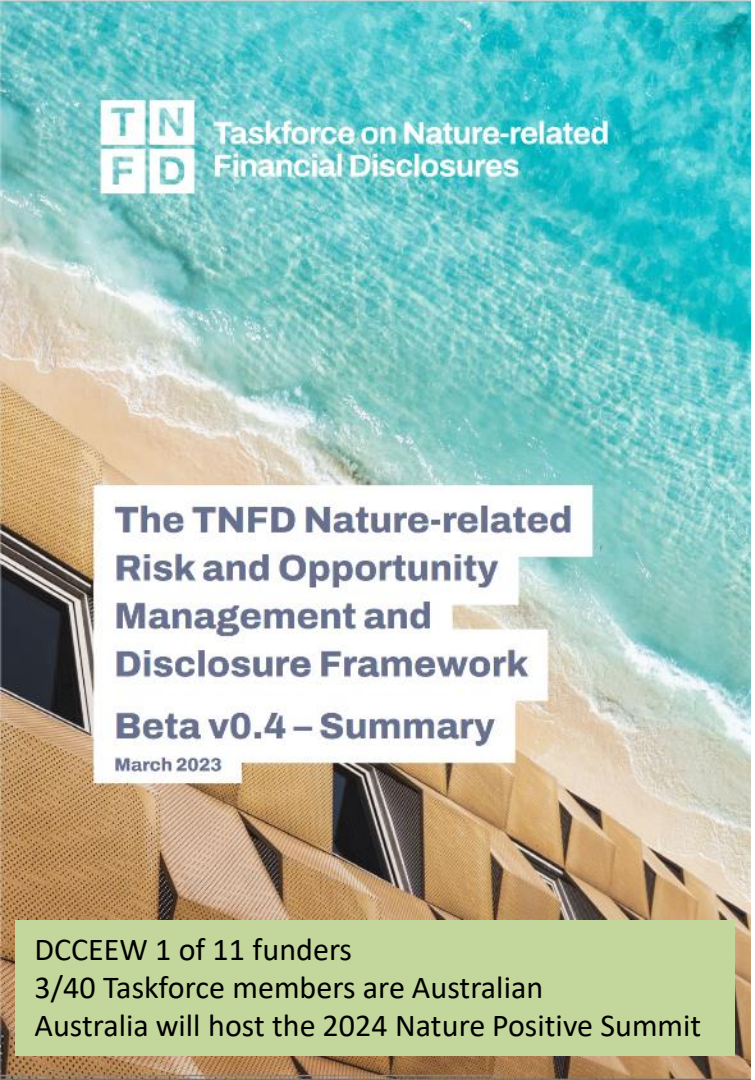
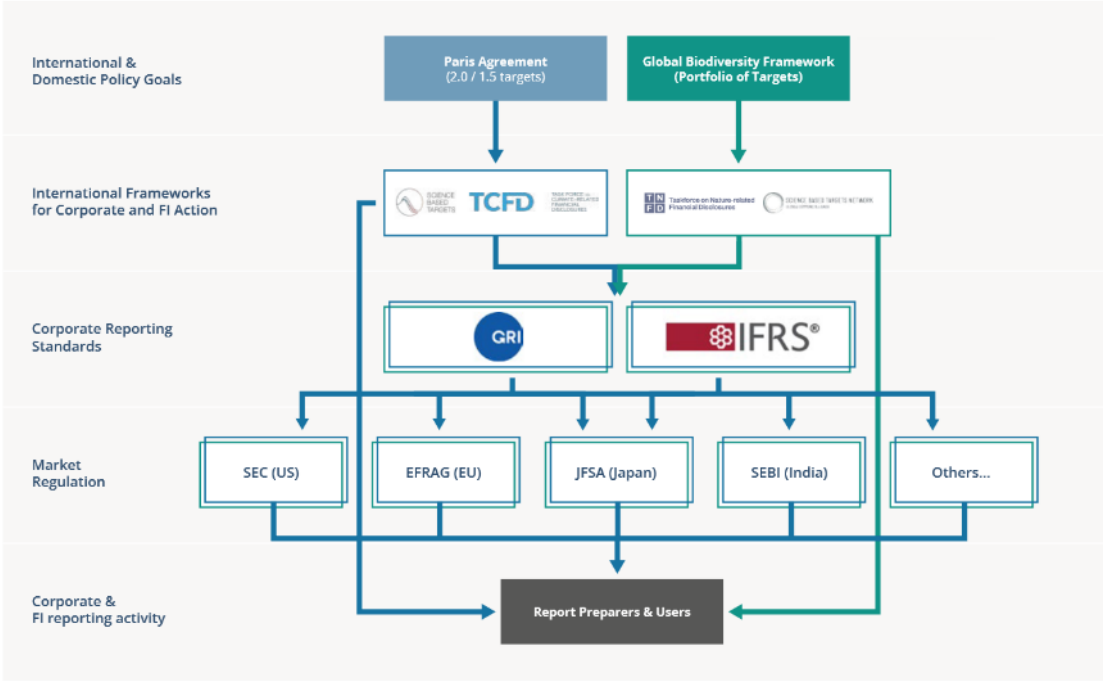
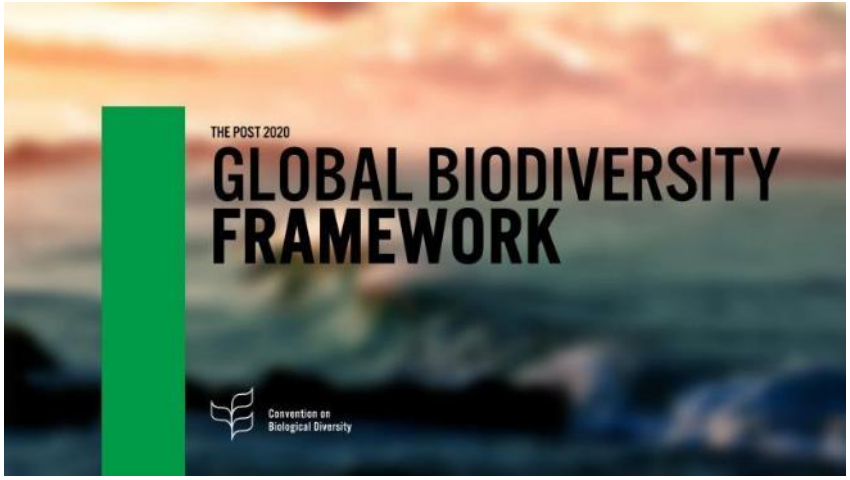


DCCEEW 1 of 11 funders
3/40 Taskforce members are Australian
Australia will host the 2024 Nature Positive Summit

TNFD

Supporting a shift in global financial flows away from nature-negative outcomes and toward nature-positive outcomes.





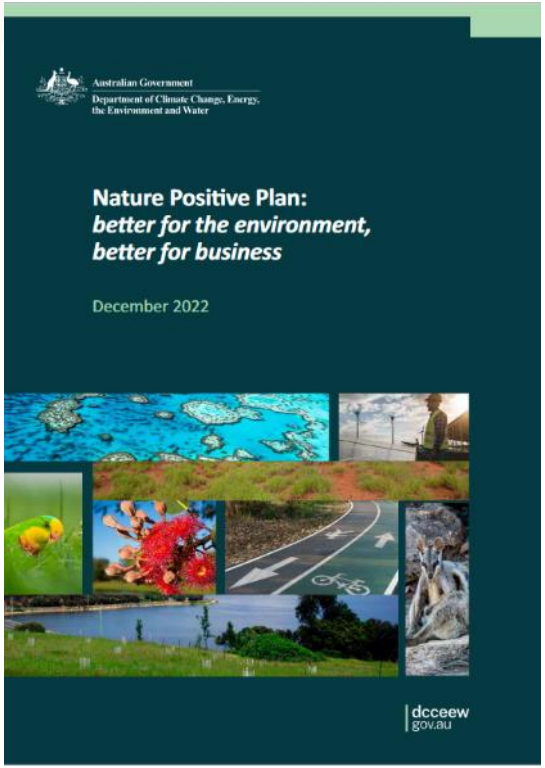
COP15 and GBF

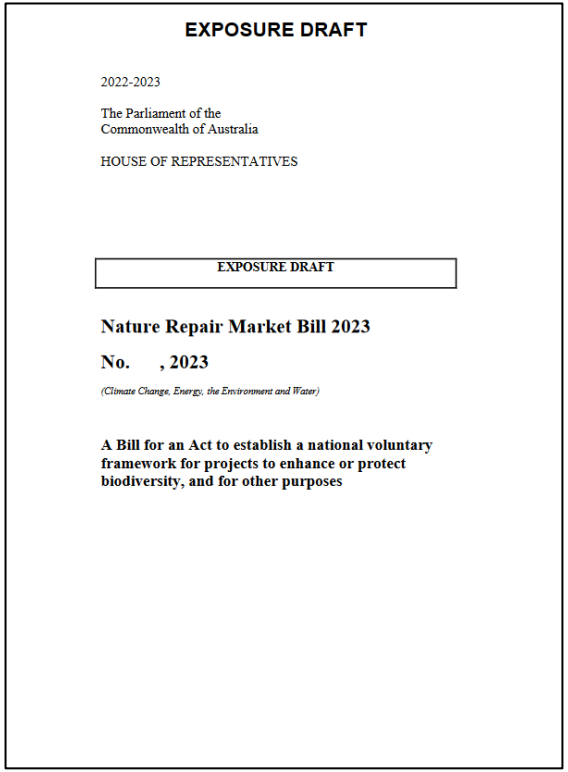
Sets targets and milestones on the route towards 'living in harmony with nature' by 2050

4 goals and 23 interim targets by 2030

- *Target 2: by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and coastal and marine ecosystems are under **effective restoration**, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.*
- *Target 15 - Take legal, administrative or policy measures so business discloses their risks, dependencies and impacts on biodiversity.*

Companies need to move quickly and those that do will benefit from timely recognition of risks and opportunities. By doing so they will be well positioned to stay ahead of the market.





EXPOSURE DRAFT

2022-2023

The Parliament of the
Commonwealth of Australia

HOUSE OF REPRESENTATIVES

EXPOSURE DRAFT

Nature Repair Market Bill 2023

No. , 2023

(Climate Change, Energy, the Environment and Water)

A Bill for an Act to establish a national voluntary framework for projects to enhance or protect biodiversity, and for other purposes

Australian Government
Department of Climate Change, Energy, the Environment and Water

Nature Repair Market Draft Bill

Biodiversity Certificates

What is a biodiversity certificate?

The nature repair market establishes a framework for issuing, tracking and ensuring the integrity of **biodiversity certificates**.

Biodiversity certificates provide an easy way for businesses, governments and individuals to invest in nature repair projects – without owning an interest in the land.

A **single certificate** will be issued for each project. Certificates will provide **standardised information** to enable the market to compare and value projects.

Certificates will be listed, and their status and ownership tracked via a **public register**. This will help certificate owners show their shareholders, customers and employees how they are supporting nature repair.

The *Nature Repair Market Bill* (the Bill) includes provisions to ensure the ongoing integrity of **biodiversity certificates**. These are designed to ensure the market can have confidence that **biodiversity certificates** will always accurately describe the projects and the outcomes it is achieving for nature. For more information, please see our factsheet on ensuring integrity.

What information would be on the certificate?

The information on the **biodiversity certificate** will include:

- the type of project, for example protection of existing high-quality habitat or restoration of habitat
- the area and location of the project
- the type of habitat, its conservation priority and any threatened species
- the activities that will be undertaken, for example fencing, weeding, in-fill planting and pest control
- the initial condition of the habitat and the expected change in condition of the habitat as a result of the project, including benefits for threatened species and ecological communities
- the duration of the project, for example protection in perpetuity or management for 10 years (because the land is already protected under a conservation covenant)

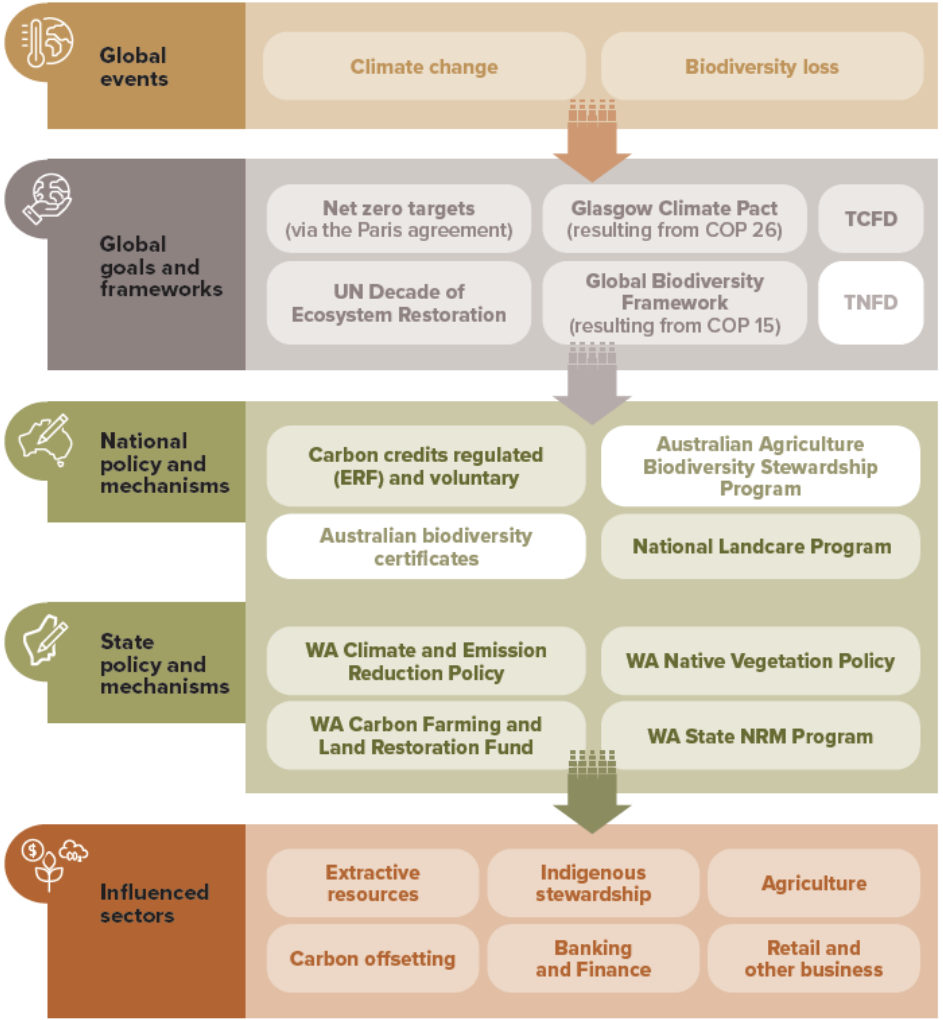
Biodiversity certificates could also include information about other matters such as First Nations engagement and community benefits.

Proponents will be required to monitor and report on their projects, including its benefits for biodiversity. Proponents will also have to report relevant changes to the project such as impacts of bushfire. Certificates will be updated to reflect this information. This will ensure certificates always provide accurate information about the project and its benefits for nature.

Department of Climate Change, Energy, the Environment and Water
December 2022

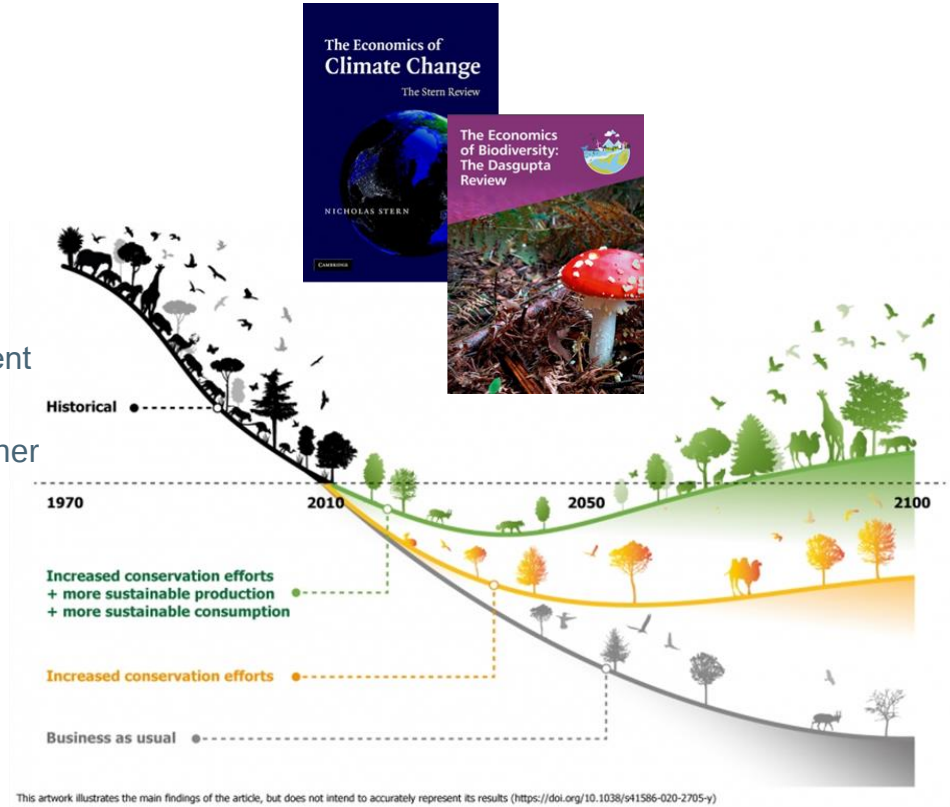
Global shift →

net-zero and nature positive



The state of nature

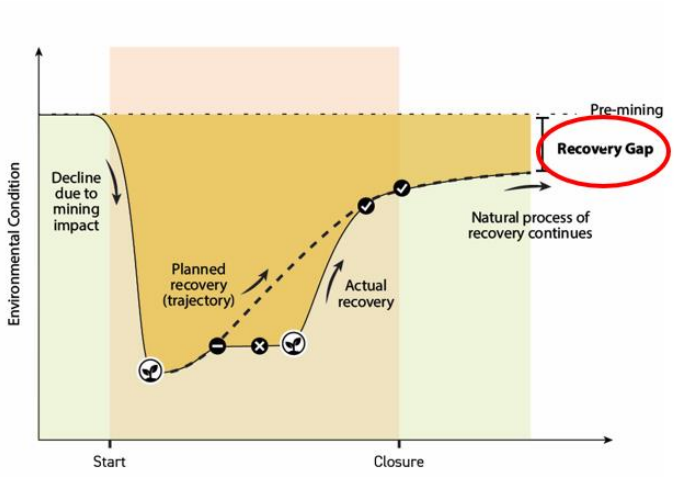
- **Nature loss and climate change are intrinsically interlinked**
- **Biodiversity loss and ecosystem collapse** - top five global risks over the next 10 years (*WEF Global Risks Report, 2023*)
  - 50% of world's GDP is moderately or highly dependent on nature and its services (*Dasgupta, 2021*)
  - All businesses depend on nature and its services either directly or through their supply chains
- The overall state of Australia's environment is '*poor and continues to deteriorate*' (*State of Environment Report, 2021*)
- **Nature loss** is rapidly being **repositioned** from a purely **environmental issue** to one that implicitly threatens the global economy and creates **material financial risk** for businesses

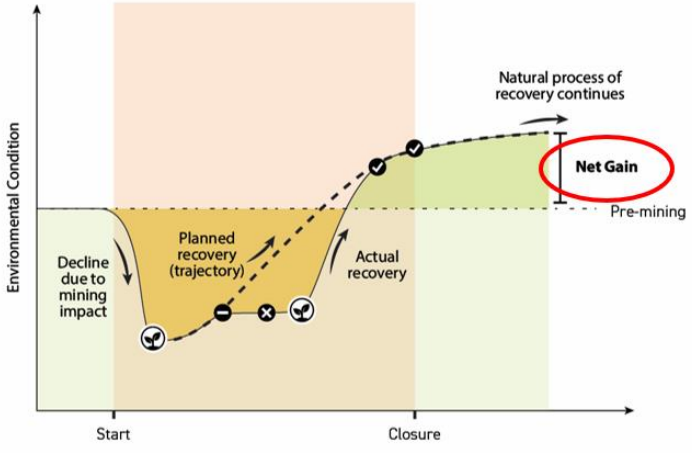


This artwork illustrates the main findings of the article, but does not intend to accurately represent its results (https://doi.org/10.1038/s41586-020-2705-y)

From - Leclère, D., Obersteiner, M., Barrett, M. *et al.* Bending the curve of terrestrial biodiversity needs an integrated strategy. *Nature* 585, 551–556 (2020). https://doi.org/10.1038/s41586-020-2705-y

Establishing a restoration trajectory enables early identification for remedial actions





The **recovery gap** is the physical or knowledge impediment that cannot be overcome and reflect discrepancy between pre-mining state and what is technologically possible.

It represents potential regulators ad social license risk that must be openly conveyed.

BHP Beenup Natural Capital Account

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BHP Beenup Natural Capital Account

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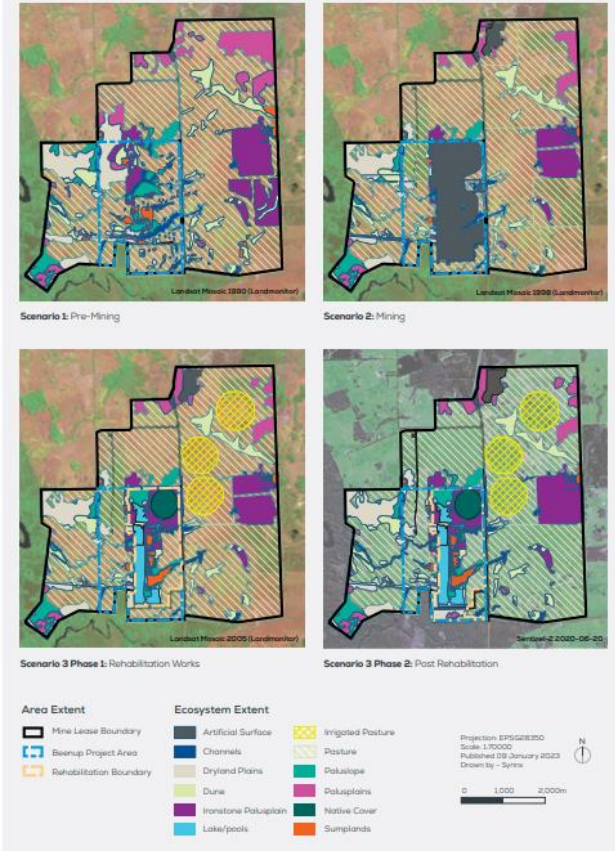

BHP Beenup Natural Capital Account

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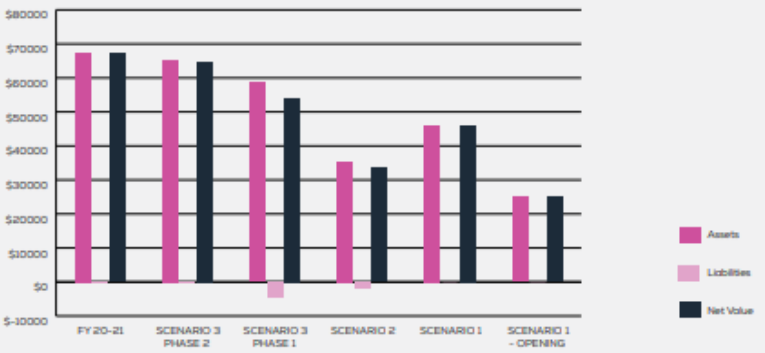
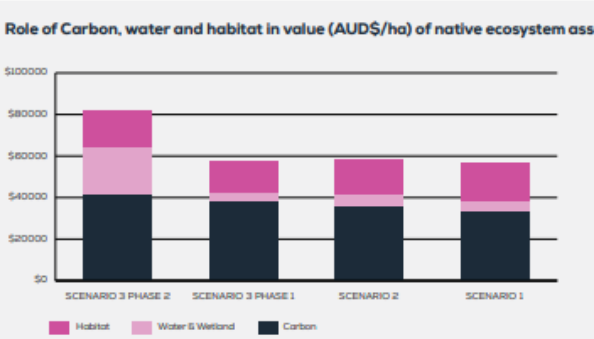


Figure 9. Summary of the net natural capital value for each of the NCA Scenarios (AUD$/ha)

Figure 10. Total gross value of native and pasture ecosystems across the NCA Scenarios (AUD$/ha)

Table 10. Breakdown of the contribution of carbon, water and wetlands and habitat to gross natural asset value (AUD$/ha)

Ecosystem Asset Value (AUD$/ha)	Scenario 3 Phase 2 AUD$	Scenario 3 Phase 1 AUD$	Scenario 2 AUD$	Scenario 1 AUD$
Carbon	40,841	37,661	35,736	32,548
Water & Wetland	23,111	4,714	5,581	5,187
Habitat	18,175	15,336	17,022	19,480
TOTAL	**82,127**	**57,711**	**58,339**	**57,215**



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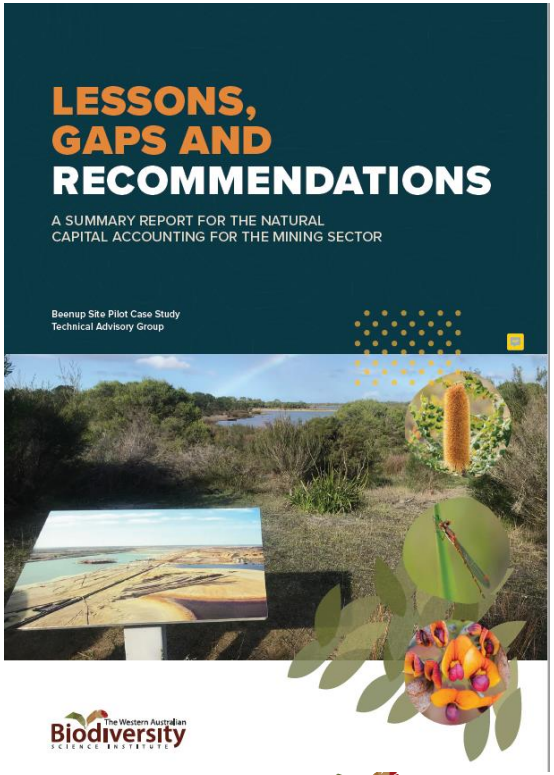
Learnings to date

- Nature is complex and is difficult to assign a value due to its uniqueness confounded by natural and human effects
  - We don't know what right is – act to learn
  - Leverage knowledge partnerships
- Understanding and incorporating cultural and community values will take time
- Get framing right early to set up targeted information and data requirements and eliminate waste
  - don't just try to make your data fit your solution
- Global and National reform agenda is rapidly evolving
  - involvement will enable more workable outcomes



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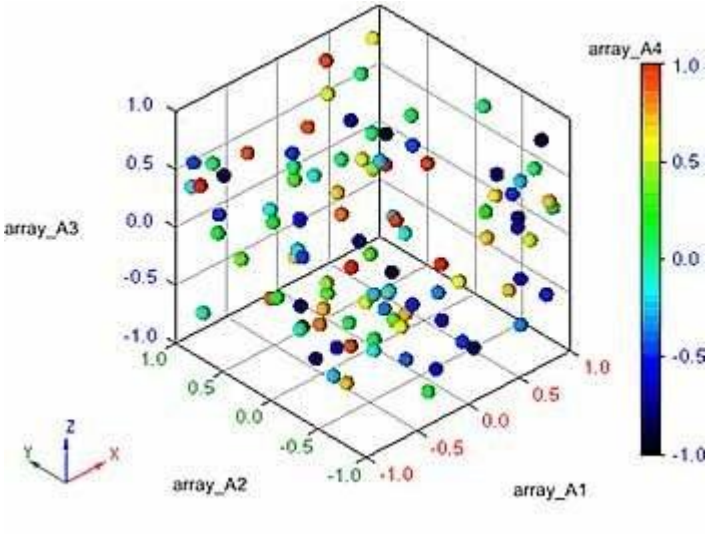
Multi-dimensional index of value

- Extent
- Species richness
- Rarity
- Uniqueness
- Quality (in relation to pristine or reference)



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