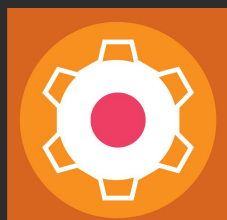




A nature-positive Australia

**The value of an Australian
biodiversity market**



pwc

Purpose

This report aims to inform a broader discussion about our relationship with biodiversity and the Australian biodiversity challenge. It explores the potential for government, landowners, First Peoples, industry, community, scientists, and philanthropic partners to address Australia's biodiversity crisis through a biodiversity market.



We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture, and pay our respects to their Elders past and present.

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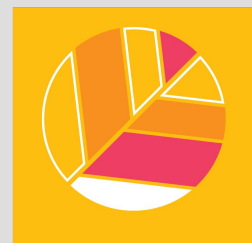
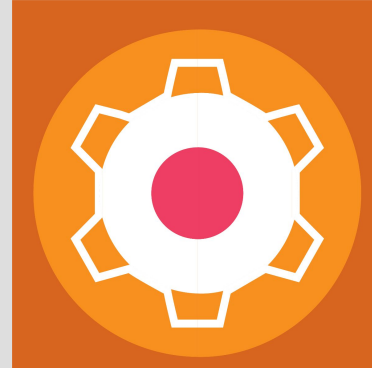
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Highlights and findings

- A biodiversity market could **unlock AU\$137 billion in financial flows** to advance Australian biodiversity outcomes by 2050.
- More than half this activity (AU\$78 billion) is forecast to be driven by biodiversity, conservation and natural capital-themed bonds, loans, debt and equity.
- A biodiversity market could help deliver finance by connecting landholders engaging in biodiversity restoration and management with those willing to pay for these activities.
- Real estate, agriculture, tourism and hospitality, and mining sectors are well positioned to unlock nature-positive opportunities.
- A biodiversity market is not a silver bullet and should not be used to substitute other important measures, such as funding and support for conservation, protection and restoration of species and ecosystems.
- A biodiversity market should be underpinned by strengthened biodiversity regulation, legislation and a framework that ensures ongoing monitoring and reporting, compliance and enforcement.
- Global momentum toward a nature-positive planet is rapidly building. Australian businesses will need to begin embedding nature-related considerations into their businesses to meet growing global regulatory and market shifts.

In this report, we explore the opportunity for Australia to develop a biodiversity market, and the potential for government, landowners, First Peoples, industry, community, scientists, and philanthropic partners to work together to address Australia's biodiversity crisis.





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Foreword

Our health, livelihoods and economies depend on nature. From coral reefs protecting coastlines against erosion and whales circulating essential nutrients throughout the ocean, to the pollination of plants and the provision of food, nature is humanity's most valuable asset.

Roughly half of Australia's gross domestic product (GDP) is moderately to highly dependent on nature and its services.¹

However, the value of these services is hard to measure and often gets ignored – with alarming consequences for our planet and its inhabitants.

The twin crises we face – climate change and destruction of biodiversity – threaten irreversible changes to our ecosystem and the wellbeing of people around the world.

Humanity's current demands on nature are unsustainable. The unprecedented and widespread decline of biodiversity in Australia – and around the world – is generating significant but largely overlooked risks to the economy and the wellbeing of current and future generations.

The Australian Government's release of the 2021 *State of the Environment* report painted a dire picture of our nation's nature record. It detailed the continual decline of more than 1,100 wildlife populations in Australia due to pressures from climate change, habitat destruction and introduced predators of our ecosystems, many of which are showing signs of collapse.

It is estimated that Australia would need to spend AU\$2 billion annually for 30 years to restore degraded ecosystems.²

From our life-supporting reefs, which support 25 per cent of all marine life, to our native forests that are the lungs of our country; Australia's state of biodiversity is in peril.

If we flip this narrative from biodiversity as an issue to biodiversity as a solution, we can see the healthier our ecosystems are, the more nature and humanity are resilient to climate change, and the more nature is able to supply the ecosystem on which humanity relies.

While biodiversity is declining at an unprecedented rate globally, this decline is at a significantly slower rate on lands governed by Indigenous Peoples, demonstrating their success as stewards of their natural environment, and the imperative to incorporate traditional wisdom in the valuing and protection of nature³.

In order to truly value nature in all its forms, we must radically change how we think, act and measure economic success. Historic failure of economics to take account of the true value of nature has come at a devastating cost to the natural world and through this, human livelihoods.

There is immense opportunity for Australia to integrate nature into its economy. This means not only capturing the value of nature in economic terms, but properly valuing the spiritual, cultural and emotional values that nature brings.

We are seeking to shine a light on both the opportunities and risks of a biodiversity market mechanism and consider its potential to address Australia's biodiversity crisis. This report offers an opportunity to reframe the debate to build a nature-positive Australia that unlocks billions in investment to repair biodiversity and nature.

This report aims to build a foundation for government, landowners, First Peoples, community, industry, scientists and philanthropic partners to work together to address Australia's biodiversity crisis through a biodiversity market.



01

The need for change

1.1 The biodiversity challenge

Biodiversity decline is an issue Australia cannot afford to ignore, with our country's ecosystems, livelihoods, wellbeing and economy at stake.

Nature is experiencing the most rapid and unprecedented decline in human history.

Globally, wildlife populations fell by 69 per cent between 1970 and 2018, posing 'irreversible consequences for the environment, humankind, and economic activity, and a permanent destruction of natural capital, as a result of species extinction'.⁴

More than one million species are threatened with extinction globally. The rapid decimation of species we are seeing today is estimated to be between 1,000 and 10,000 times higher than the natural extinction rate.⁵

Australia and its surrounding seas support 600,000 to 700,000 native species, many of which are found nowhere else in the world.⁶ Yet Australia has the unenviable record of holding the highest mammalian extinction rate in the world, with one of the highest overall rates of species extinction. At least 19 Australian ecosystems are showing signs of collapse or near collapse.

The twin crises of nature destruction and climate change are inextricably linked

Human activity has altered much of Australia's landscape, with introduced species, habitat destruction and clearing being the key drivers of biodiversity decline.

Biodiversity decline and climate change are both driven by human activities and mutually reinforce each other. Changing climate is causing variances in temperature and rainfall, as well as increasing the frequency and intensity of extreme weather events. This is changing habitat ranges for plant and animal species, and depleting ecosystems of their sustenance. Similarly, the decline of biodiversity is reducing nature's ability to store carbon, exacerbating climate change.

Addressing climate change and biodiversity separately poses significant risks to overall environmental outcomes. For example, the impact of mining the raw materials used for renewable energy – which requires vast amounts of land – potentially poses significant risks to biodiversity as well as to First Peoples and cultural heritage sites. A biodiversity lens as well as other existing and important regulatory and environmental standards will be critical to ensuring climate and biodiversity impacts are avoided or mitigated.

The economy, human livelihoods and wellbeing are all dependent on high-functioning natural environments and their biodiversity

Approximately half of Australia's GDP is directly dependent on nature and is at significant risk from biodiversity destruction.¹ The rest is indirectly dependent through complex value chains.

Destruction of biodiversity and changing land use pose significant risks to human health and livelihoods. Medical and pharmacological discoveries, such as anti-inflammatories, antifungals and chemotherapy, are all derived from nature. Similarly, 70 per cent of the most consumed foods worldwide rely on nature's pollinators, from bats to insects and bees.⁷

The decline of biodiversity threatens global food security, limits the potential for the development of new pharmaceuticals to deal with future diseases, and leads to a faster rate of emergence and re-emergence of infectious disease in humans.

Indigenous Peoples protect 80 per cent of global biodiversity⁸

As Traditional Custodians of the whole country, and rights' holders of over 50 per cent of the land and an increasing proportion of sea country too, challenges relating to biodiversity in Australia won't be solved without meaningful engagement with Aboriginal and Torres Strait Islander peoples.

While biodiversity is declining at an unprecedented rate globally, this decline is at a significantly slower rate on lands governed by Indigenous Peoples.³ This provides an important case study in successful stewardship of the natural environment, and the imperative to incorporate traditional wisdom in the valuing and protection of nature. In addition, it highlights the importance of centring Indigenous Peoples' and local communities' rights and agency in biodiversity policy.



1.2 What is a biodiversity market?

The relationship between society and environment is becoming increasingly unsustainable. We need to change the way we think, act and measure economic success to protect and enhance the natural world.

What is a biodiversity market?

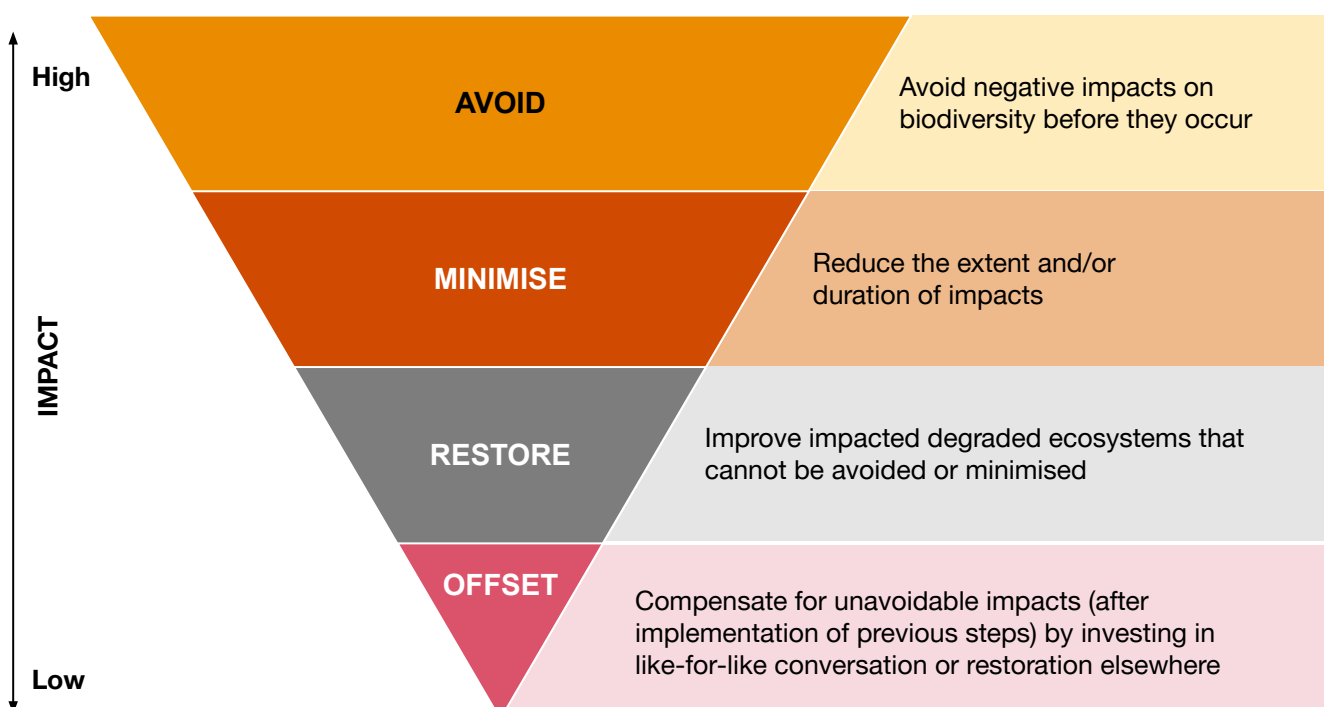
A proposed biodiversity market would operate by putting a price on nature commodities or ecosystem services, with the intention of facilitating investment in conservation and restoration.

For example, landholders could be rewarded for kelp restoration and seeding activity by issuing certificates that are then sold on the market to private companies, such as a tourism operator wanting to enhance nature outcomes. Markets are an attractive option for sourcing funding for conservation actions from private sector proponents to supplement limited conservation and restoration funding by government.

Biodiversity market mechanisms should be structured around the 'mitigation hierarchy', where market-based tools are only employed as an absolute last resort, after all efforts have been made to (first) avoid, (second) minimise and (third) mitigate negative impacts to biodiversity.

The primary challenges of a biodiversity market include the difficulty in quantifying biodiversity values for market purposes, particularly where biodiversity is in decline (a 'declining baseline'); the integrity of employing an offsets scheme; and, the challenge of balancing the long-term requirements of conservation and restoration with the short-term gains expected from the private market.

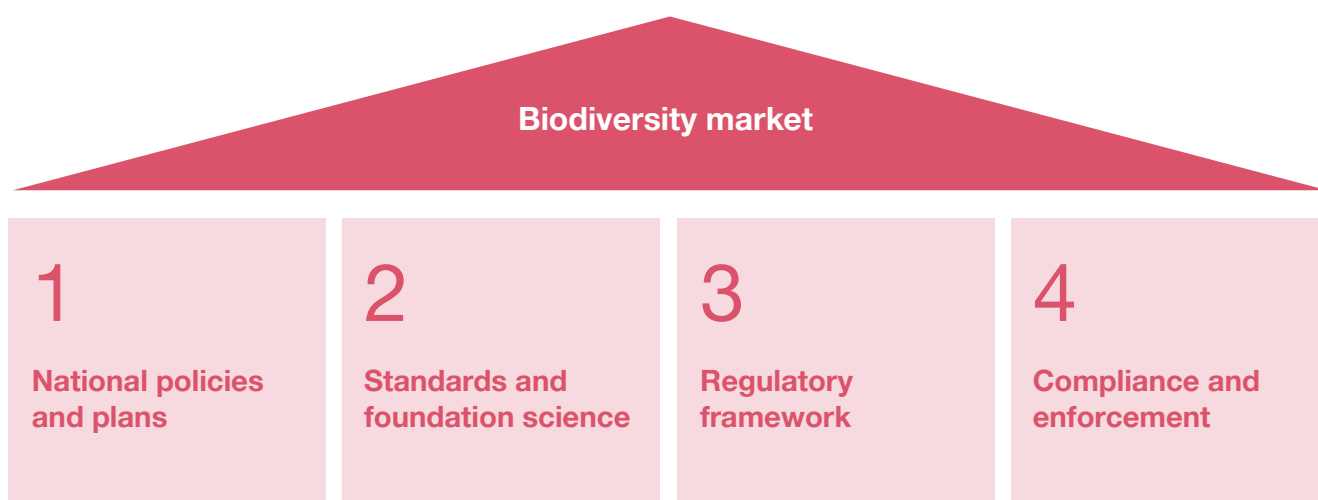
Momentum toward a nature-positive planet is rapidly building. The Global Biodiversity Framework is set to be agreed at the UN Biodiversity Conference (COP15) in December, accompanied by a global goal to protect 30 per cent of the world's terrestrial and marine habitats by 2030. This coincides with the Australian Government's pledge to reverse biodiversity loss by 2030 and prevent any new extinctions of Australian wildlife. Equally, the development of the Taskforce on Nature-related Financial Disclosures (TNFD) raises the bar for how organisations manage and report on nature-related risks.



Any biodiversity market should aspire to have as much activity as possible directed towards incentivising preventive measures. Anticipating and preventing adverse impacts on biodiversity has significantly greater benefits to landscapes and ecosystems than simply reducing the direction or intensity of activity. Remediative measures are important, particularly where a biodiversity market incentivises landscape or habitat restoration activities; however, offsetting should only be considered where impacts to biodiversity are unavoidable, if at all.

There are four pillars that underpin a biodiversity market. These pillars are critical enablers that ensure a biodiversity market actually supports biodiversity outcomes and avoids ‘greenwashing’.

In order for a biodiversity market to achieve positive outcomes for biodiversity and unlock the financial benefits articulated in this report, government, industry and community need to work together to drive change.



1 A national biodiversity strategy and plan

A dedicated and comprehensive strategy and action plan is a crucial step in supporting biodiversity. It should set out the overarching goals for government, industry and communities across Australia to support healthy and functioning biological systems by promoting a stronger connection between people and nature. Australia is a party to the Convention on Biological Diversity (CBD), and has had a national strategy since 1996, the latest of which is Australia’s *Strategy for Nature 2019–2030*, which was endorsed by Australian, State and Territory Environment Ministers in 2019.

We need to create an enabling environment that brings together government, industry and landowners to address Australia’s biodiversity crisis.

2 Standards and foundational science

Foundational science and environmental standards are critical to both industry and government. This includes access to timely data and analytics that provide a robust and independently assured baseline of the state of the environment, monitoring of regional trends and impacts of activity, and forecasts to identify future risks to biodiversity.

In addition, national environmental standards (a key recommendation of the Samuel Review) are also a critical pillar. Environmental standards prescribe outcomes for the protection and conservation for matters of national environmental significance. Standards provide a more transparent and science-based view of the limits of acceptable impacts on biodiversity and support more effective implementation of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Environmental reforms are gaining momentum nationally, including legislative requirements to consider cumulative environmental impacts. This, coupled with the increasing prominence of the TNFD, reinforces the role of foundational science as a critical enabler for supporting biodiversity.

3 Regulatory framework

A strong and robust regulatory framework is a critical pillar in supporting biodiversity. Governments need to step in to regulate activities that otherwise would lead to excessive, above proportionate or avoidable impacts on biodiversity.

Environment protection regulations exist at national, state and local government levels. However, modernising these regulatory frameworks is critical to ensuring that they are effectively protecting biodiversity and not creating undue regulatory burden for industry.

The independent review of the EPBC Act by Professor Graeme Samuel, released in 2019, found:



The EPBC Act does not clearly outline its intended outcomes, and the environment has suffered from two decades of failing to continuously improve the law and its implementation. Business has also suffered. The Act is complex and cumbersome and it results in duplication with State and Territory development approval processes. This adds costs to business, often with little benefit to the environment.”

Samuels Review, 2019

Ensuring that Australia’s regulatory framework sets clear outcomes for the environment and provides transparency in the process will be a critical enabler of a successful biodiversity market.

4 Compliance and enforcement

Strong oversight, compliance and enforcement, which ensure that impacts to biodiversity adhere to the law, are another foundational pillar of a biodiversity market. While a strong regulatory framework is critical, regulations won’t be able to achieve their full effect without the capacity, resources and/or adequate information to undertake compliance monitoring and enforcement of the law.

A lack of proper compliance and enforcement of industry activity on the environment will undermine trust and confidence in a biodiversity market. A lack of transparency will impact on investor confidence for finance seeking to unlock nature-positive outcomes.



1.3

Unlocking a biodiversity market



A well-functioning biodiversity market may maximise ecological outcomes, as well as attract private investment

Australia has an opportunity right now to activate the local market to build a nature-positive economy. With the four pillars effectively in place, industry, philanthropic support, government and landowners are more effectively able to come together to address Australia's biodiversity crisis.

A biodiversity market could help unlock finance by connecting landholders engaging in biodiversity restoration and management with those willing to pay for these activities.

In a biodiversity market, it is the restoration management efforts that are bought and sold, with 'certificates' used as a method of standardising the transaction between a buyer and seller to enable a consistent value to be determined. This value may differ depending on the type of species or ecosystem being conserved/managed on the land. Parties that demand certificates may range from government, industries, developers, conservation non-government organisations (NGOs), private investment funds, and individuals or charities.

A biodiversity market must not be used to substitute other important measures in biodiversity protection, restoration and management, such as accelerating climate action, reducing land clearing and managing invasive species.

Our analysis suggests that **financial flows to biodiversity are currently worth up to AU\$9.9 billion in Australia**, but the proportion spent on targeted threatened species conservation, with clear outcomes, is likely much less. This is insufficient for the three reasons listed below.

1. Financial flows do not represent direct spending to threatened species conservation

Most financial flows capture indirect spending towards biodiversity through environmental and conservation initiatives, with only a small proportion of these flows being spent on targeted threatened species conservation.

For example, federal and state governments in Australia have allocated around AU\$2.3 billion towards the environment and biodiversity in their 2022–23 budgets. However, in 2019–2020, just AU\$55.3 million and AU\$71.1 million was spent on targeted species conservation at the federal and state government levels respectively.⁹

2. Financial flows are not directly linked to measurable outcomes for biodiversity

While some components of biodiversity finance can be directly attributed to biodiversity outcomes, such as environmental water trading in the Murray Darling Basin, most data on financial flows were not outcome-based, meaning that the actual biodiversity outcomes of most of these flows are not well-identified or tracked.

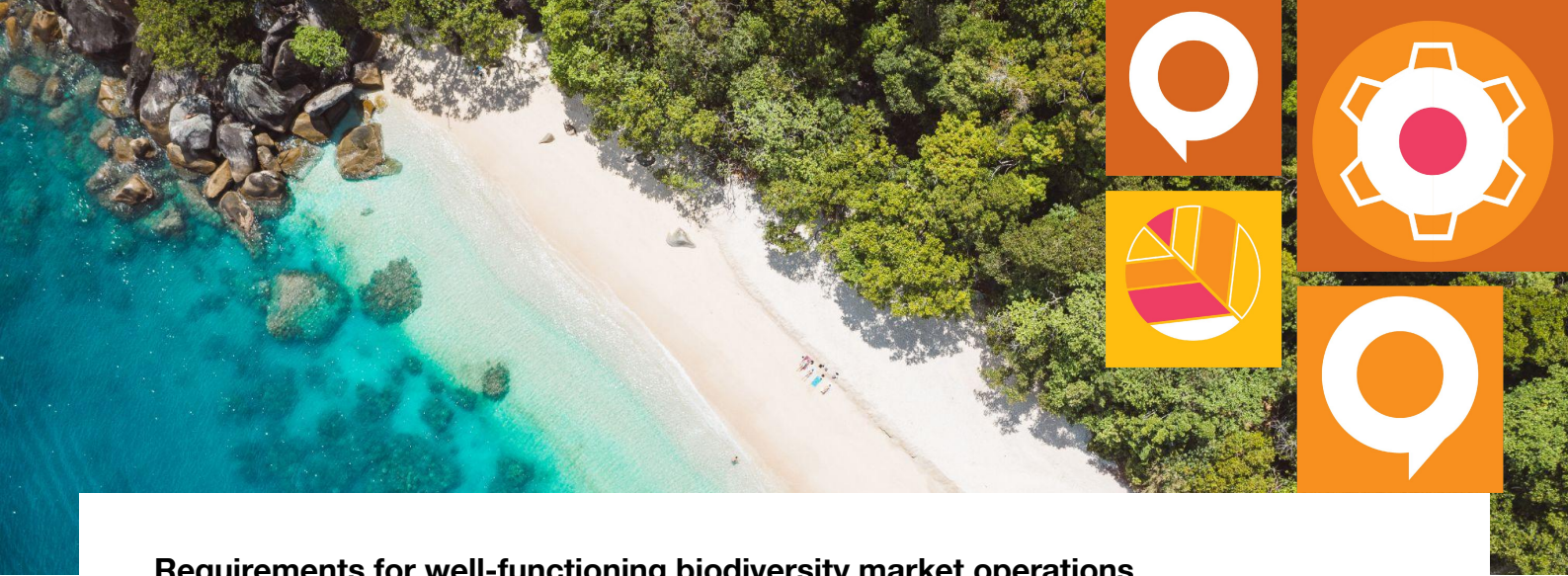
For example, the recent audit into the NSW Biodiversity Offsets Scheme found a lack of demonstrated successful outcomes and inadequate oversight in effectively protecting areas of environmental significance.

3. Financial flows to positive biodiversity activities are insufficient compared to flows to activities that impact the environment

The federal and state governments spent AU\$11.6 billion on fossil fuel subsidies in the 2021–2022 budget period, and globally, governments direct more than US\$500 billion in support that could be harmful to biodiversity, with the total harmful financial flows likely to be much greater.^{9,10} The Nature Conservancy estimates the nature funding gap is as large as US\$824 billion per year.¹¹

Industry places significant pressure on biodiversity; with agriculture, infrastructure and mobility, energy and fashion accounting for 90% of global biodiversity loss.

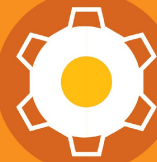
Financial flows to biodiversity in Australia are currently insufficient, and must be scaled rapidly to meet the investment required to protect, restore and manage Australia's species and ecosystem biodiversity.



Requirements for well-functioning biodiversity market operations



Our modelling indicates that a well-functioning biodiversity market could help unlock AU\$137 billion in annual financial flows to Australian biodiversity and natural capital by 2050.



02

The opportunity

2.1

Biodiversity market opportunities for industry

A biodiversity market represents both risk and opportunity for a number of industries.

Financial flows to industry will be guided by the overall exposure risk and impact an industry has on biodiversity.

Agriculture

The agriculture sector is highly dependent on the services delivered by healthy ecosystems. Agriculture occupies 58 per cent of Australian land and is a major driver of biodiversity loss, as well as highly vulnerable to the impacts of biodiversity decline.¹² Producers and agri-businesses that develop and implement sustainable and/or regenerative agricultural practices, which draw on and support biodiversity and ecosystem services, will be in a stronger position to deliver greater food security for the nation, while ensuring economic resilience and nature-positive outcomes.

Construction

The construction sector is responsible for negative ecological impacts due largely to the vast amount of materials sourced from nature in construction and the waste it produces. Companies reducing their impacts on biodiversity through optimising and reducing land use, integrating circular economy principles to reduce waste, efficient and sustainable design to reduce operational impacts (water and energy), and use of more sustainable and recycled materials, will be rewarded in a biodiversity market.

Forestry

Forest decline and degradation, and unsustainable harvesting have significant and adverse impacts on biodiversity. Equally, the forestry sector is vital for the provisioning of products and services, directly supporting the livelihoods of many.

A biodiversity market would encourage forestry businesses to demonstrate strong commitment to biodiversity, particularly through certification with the Forestry Stewardship Council (FSC). Similarly, a market mechanism would provide greater incentives to forestry businesses that assess and manage biodiversity risks across their operations and supply chains, effectively manage and avoid areas of high biodiversity value, and protect forests from illegal and unauthorised activity.

Energy, mining and resources

Mining threats to biodiversity caused by renewable energy production may surpass those of fossil fuel developments. Critical minerals are critical in the transition to a renewable economy; the International Energy Agency predicts a 30-40x increase in demand for minerals in 2040.¹³ This translates to increased use of land and, consequently, a greater risk to biodiversity and sites of cultural significance.

Energy, mining and resources companies will be expected to better understand the value of biodiversity, both to their long-term operations and to local communities. Companies constructing solar, onshore and offshore wind assets will be encouraged to minimise and/or avoid impacts in both the design, construction, operation and end of life. A biodiversity market mechanism may support companies to avoid development in areas of high biodiversity value, reducing their risk of litigation, regulatory intervention and reputational damage.

Tourism

Biodiversity is a key asset to the tourism industry and is crucial to the sector's growth and resilience. Tourism has a strong influence on biodiversity decline and a role (and key stake) in its conservation. By contributing to the protection and conservation of biodiversity, tourism businesses can support and participate in the development of a biodiversity market, while ensuring the economic prosperity of their business and industry as a whole.



2.2

The 'value' of a biodiversity market



Understanding the value of a biodiversity market

Clearly there is work to be done to better understand the true value of biodiversity. The value of biodiversity can be considered across many dimensions including:

- the economic value of its natural resources (**direct-use values**)
- the value provided to society from its ecosystem services, such as clean drinking water (**indirect-use values**)
- the wellbeing benefit of knowing biodiversity exists (**existence value**) or that it can be used for future generations (**bequest value**)

This report, however, only attempts to understand the value of the direct economic value of a biodiversity market. It does not attempt to measure the significantly greater value associated with biodiversity's non-use and indirect-use values.

Quantifying the impact

To understand the potential future value of a biodiversity market, we have modelled the financial flows to biodiversity from 2022 to 2050. We have adapted the Organisation of Economic Co-operation and Development's (OECD's) Global Biodiversity Finance estimation methodology for relevance to the Australian context.¹⁰

The key financial flows in this report are included in Figure 1 within the Direct Value category. These include investment flows from private biodiversity, conservation and natural capital investments, and sustainable commodities, expenditure by conservation NGOs and government, and market-based transactions, such as forest carbon offsets and environmental water trading.

While the methodology provides a comprehensive overview and estimate of biodiversity finance, there are many initiatives underway to further improve the assessment, tracking and reporting of biodiversity finance flows.

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.

Direct flows to a biodiversity market

This section discusses the types and potential value of financial flows to biodiversity now and in 2050.



Private biodiversity, conservation and natural capital investments

Biodiversity, conservation and natural capital (BCNC)-themed investments refer to private investment with the explicit objective to improve these outcomes alongside financial returns.¹⁴

Types of investments include BCNC-themed bonds, loans, debt and equity, including sustainability-linked debt issuances and sustainability-linked loans, as well as impact investing, such as community finance and green bonds. These investments are expected to significantly increase over the next few decades, and globally could generate up to US\$10 trillion in business value annually by 2030.¹⁵

This is driven by international initiatives such as the TNFD, providing investors and lenders with a science-based view of exposure to biodiversity loss, financial impacts of inaction, and importantly, incentivising companies to operate more sustainably.

Using forecasts for new assets under management from the Responsible Investment Association Australasia (RIAA) and conservative assumptions regarding the rate of BCNC-themed investments, these financial flows could be worth up to **AU\$78 billion annually in Australia by 2050**.

Private BCNC investments alone are forecasted to be the greatest driver of financial flows to 2050 and could be worth 0.6 per cent of Australia's GDP in 2030, and 2.8 per cent of GDP in 2050, based on the assumption of increased government regulation and prevalence of environmental impact assessments in the private sector, improved and more consistent methods of natural capital accounting, and clear mechanisms for financial returns.



Conservation NGOs and charities

Expenditure on biodiversity-related conservation activities by charities and conservation NGOs is an important financing mechanism through which the private sector can contribute to biodiversity conservation.

In 2020, income from charities registered on the Australian Charities and Not-for-profits Commission (ACNC) that list their main activities as 'environmental' and cite biodiversity, threatened or endangered species in their explanation of how purposes were pursued was valued at AU\$326.9 million.

This included income from notable contributions from conservation NGOs such as Australian Wildlife Conservancy, Bush Heritage Australia, Nature Conservancy, Tasmanian Land Conservancy and Trust for Nature.

Assuming that a proportion of this charity income can be allocated directly towards biodiversity-related conservation expenditure, this would see the sector contribute **AU\$11 billion to the Australian biodiversity market annually by 2050**. Future growth is forecast based on growth in the share of these charities' income compared to total ACNC charity income



Government expenditure

Government expenditure and subsidies for biodiversity in Australia are defined as federal and state government expenditures with the most direct impact on biodiversity, through targeted threatened species conservation (lower limit) or budgetary spending on conservation and the environment (upper limit).

While an estimated average of AU\$2.9 billion is spent per annum by federal and state governments on conservation and environmental initiatives, most of this spending will have indirect and often unclear impacts on biodiversity. A more conservative lower estimate of AU\$130 million in 2022 was estimated as the direct spending on targeted threatened species conservation by federal and state governments.

It is expected that government spending will continue to increase steadily, at a rate consistent with nominal GDP growth. If budgetary spending on conservation and the environment holds, then the overall upper limit estimate of the contribution from government to biodiversity would represent **AU\$8.5 billion in direct financial flows to the biodiversity market annually by 2050.**

Our modelling suggests government expenditure will make up an increasingly smaller portion of total financial flows, as private investment in biodiversity-linked bonds, loans, debt and equity outpace growth in all other contributors to financial flows.



Sustainable commodities

Sustainable commodities refer to the private finance directed towards improving sustainability of commodity production, such as agriculture, fisheries and forestry. According to the OECD's method for valuing biodiversity finance,¹⁰ they can be represented by expenditure by companies on obtaining and maintaining biodiversity-relevant sustainability certification. This includes spending on audits, on-the-ground management and environmental impact monitoring and mitigation.

The FSC is one of the largest forest certification schemes globally, with specific objectives on biodiversity (land covered under FSC is used as a progress indicator under the Aichi Biodiversity Target 7).

Pre- and post-certification costs for this scheme provide a way of capturing the value of private finance directed towards sustainable commodities in Australia. Our analysis suggests that sustainable commodities could contribute **AU\$5 billion annually to an Australian biodiversity market by 2050.**



Forest carbon offsets

Forest offsets can allow landowners to monetise the carbon that is stored in their trees and soils, and sell it on the carbon market. This has potential as a biodiversity market tool, which can encourage the sequestration of carbon, as well as increasing the species diversity within the ecosystem.

However, in practice, forest offsets are far from simple. There is a risk that a forest offsets-based biodiversity market may facilitate ‘double dipping’, where providers of biodiversity credits are able to sell the same credit in both carbon and biodiversity markets. Careful consideration should be given to the relationship and interactions between carbon and biodiversity markets to ensure the integrity of the market is not compromised.

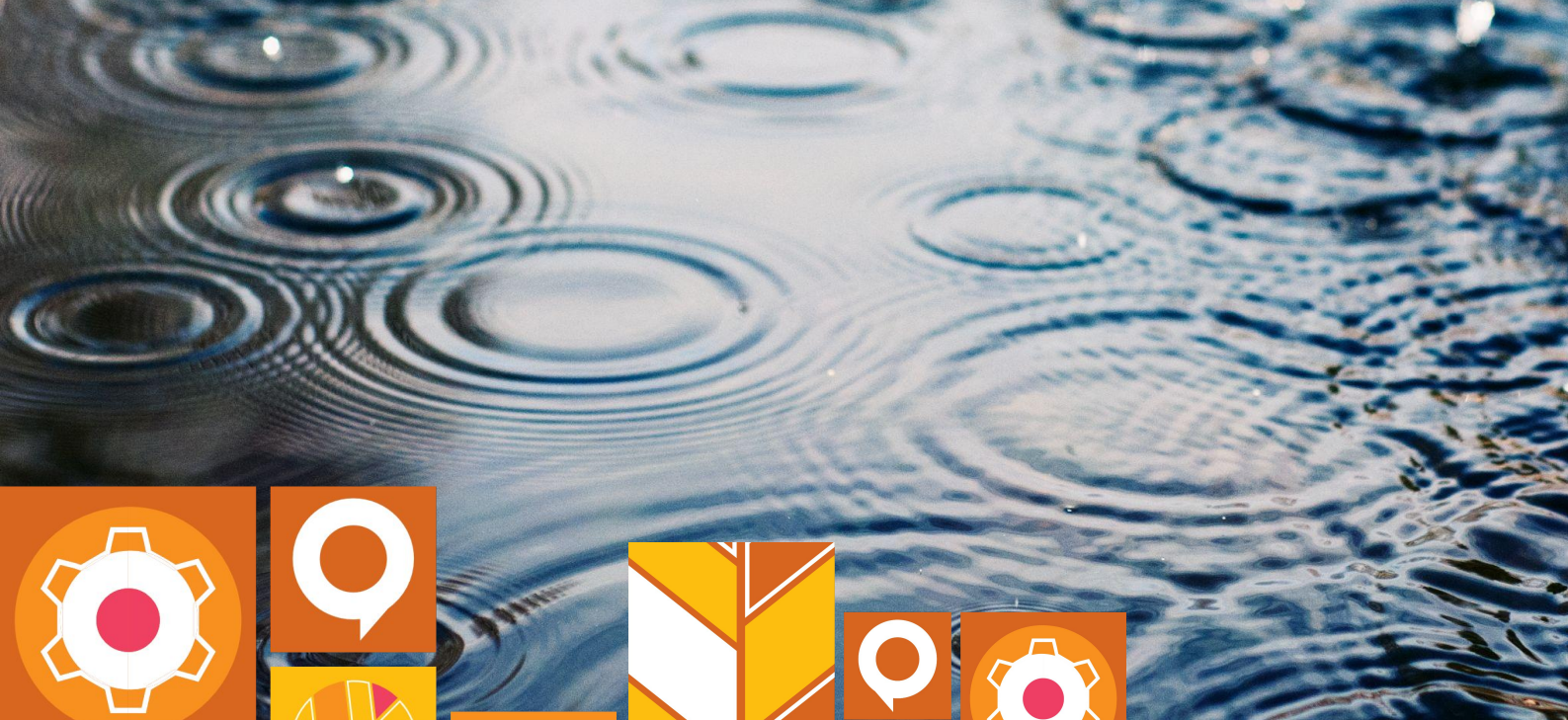
When functioning properly, forest carbon offsets reduce growing carbon emissions, engage developers in climate action and, at the very least, offset damage to biodiversity. Unfortunately, there are a number of notable examples where this hasn’t been the case, including examples where the offsets don’t result in any reduction of carbon emissions, instead serving as a tool for greenwashing.

If these forest carbon offsets are properly governed and only adopted when there aren’t substitutes further up the mitigation hierarchy, then they could form part of biodiversity markets. The sale of carbon credits from forest and land use projects are used as a proxy for flows of biodiversity-relevant climate finance.¹⁶

Our analysis suggests the value of these forest carbon offsets could reach as much as AU\$24 billion annually by 2050. The estimated transaction value of forest carbon offsets in Australia is based on the operation of Australia's Emissions Reduction Fund, which is a voluntary market where approved carbon emissions projects generate Australian Carbon Credit Units (ACCUs), representing one tonne of CO²-equivalent net abatement (t CO²-e). The estimate assumes BloombergNEF’s global price forecasts, assuming a removal scenario enabling supply of offsets for storage and sequestering of carbon.

Growth in transaction value to 2030 and 2050 is driven by expected growth in both quantity and price of ACCUs, due to increasing demand from the private sector as net-zero commitments are solidified and actioned.





Biodiversity offsets

Biodiversity offsets refer to the trading of ‘credits’ between landholders engaging in biodiversity management activities (‘sellers’) and developers needing to offset their development impacts (‘buyers’), once all possible actions to avoid and mitigate impacts on biodiversity are taken. Projects that use biodiversity offsets to address environmental impacts must have rigorously applied the mitigation hierarchy, to achieve no net loss and ideally net gain in biodiversity.¹⁷

The *State of the Environment Report* indicates that a growing dependency on biodiversity offsets to protect ecosystems of environmental significance is concerning, given ‘a lack of demonstrated successful outcomes and inadequate oversight’.⁶

However, based on Infrastructure Partnerships Australia’s reporting of the forecasted infrastructure pipeline across states, significant development activities are to take place in the coming years.¹⁹ From these current forecasts and the offset schemes in place, we estimate that there could be up to **AU\$9 billion in biodiversity offsets traded annually by 2050 to account for unavoidable environmental impacts.**



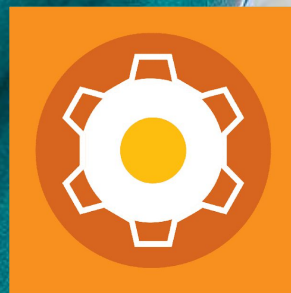
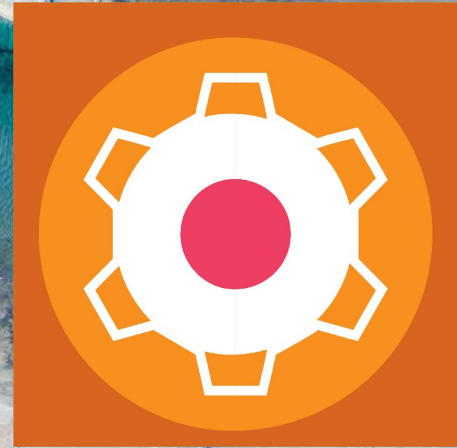
Environmental water trading

Environmental water refers to water that is used to improve the health of rivers, wetlands and floodplains, with measurable environmental outcomes.²⁰

Our analysis suggests that environmental water trading could contribute **AU\$1.6 billion annually to the Australian biodiversity market by 2050.**

Given that a large proportion of the Australian water entitlement market is contained within the Murray-Darling Basin (MDB) and there is availability of data for this region, this market was used to estimate environmental water trading (EWT) in Australia.²⁰ Given that some EWTs are government departments and agencies, some duplication between EWT value and government expenditure values may be present.

While the quantity of water allocated to EWTs may increase slightly to 2030 and 2050, competition for water usage for agricultural production, as well as increased drought frequency is likely to limit the growth in quantity of water allocated to the environment. Increased prices for the same reasons will likely be the key driver in EWT value in 2030 and 2050.



03

A way forward

3.1 The role of society



We need to halt and reverse nature destruction and transition to a Nature Positive global world which will require sustained, collective action throughout all of society.”

The Australian Conservation Foundation¹

First Peoples

Over the millennia, First Peoples have developed and maintained a close and unique connection with the lands and seas in which they live. The systems of knowledge and practices that First Peoples have established to manage and conserve biodiversity must be recognised, protected and valued. The ecological understandings, conservation practices and resource management techniques of First Peoples is essential to ensuring nature-positive outcomes for Australia.

Scientists and academics

Effective biodiversity conservation and restoration are underpinned by science. Despite this, there are often barriers to incorporating up-to-date and context-specific scientific research into decision-making and policy. Fundamental to a successful biodiversity market is the need for scientists and scientific research to be engaged through all steps of the development, implementation and ongoing monitoring of a biodiversity market mechanism.

Private sector and industry

The private sector and industry have an important role to play in elevating and mainstreaming biodiversity protection, conservation and restoration, and ensuring financial flows are being directed to biodiversity outcomes. Ecosystem services worldwide are worth an estimated US\$125 trillion annually, directly supporting industries such as farming, fishing, forestry and tourism. More than half the world's GDP – an estimated US\$44 trillion of economic value generation – is moderately or highly dependent on nature.¹⁵

NGOs and charities

NGOs and charitable organisations play a vital role in defending and upholding environmental values in Australia as watchdogs of policy, knowledge disseminators and sharers among community stakeholders, intermediaries between public officials and fragmented societies, as well as stewards and protectors of nature. As an integral part of the collective governance of nature in Australia, their role in certifying and governing biodiversity certificates and ensuring the integrity and inclusivity of a biodiversity market is crucial.

Community and civil society

Incorporating meaningful participation of local communities in the design of a biodiversity market ensures that the activities and benefits will support their livelihoods, particularly where these are associated with biodiversity. Drawing on local knowledge helps to ensure that the market design is feasible, realistic and sustainable, and also relevant to local contexts.

The individual characteristics of each local community's economy, resources, attributes and political structure provide different opportunities and allow biodiversity issues to be addressed at every level. Community engagement can also help recognise and address historical nature-related inequalities in local communities.



3.2

A First Peoples' perspective

Connection to Country

First Peoples have an interdependent, reciprocal relationship with ancestral lands, waterways and seas that is underpinned by respect. Country provides a connection to all aspects of First Peoples' existences through culture, spirituality, lore, family and identity. Country sustains Aboriginal and Torres Strait Islander lives in every aspect – spiritually, physically, socially and culturally.

Caring for Country

First Peoples manage and sustain their Country through culture and ceremony. Caring for Country is underpinned by a mutual respect and close connection to the environment resulting in the use of natural resources in a sustainable manner. This inherent stewardship of the environment places Traditional Owners as custodians of the environment.

Aboriginal and Torres Strait Islander peoples have sustainably managed the environment and cared for Country for over 60,000 years as part of their everyday lives. Native plants and animals have, and continue to, provide food, medicine, shelter, art, spiritual connections and the essential materials for sustaining the lives of First Peoples.

A human rights lens

Indigenous peoples around the world are among the most impacted by recent declines in biodiversity due to their reliance on, and close connection to, the environment. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) provides an internationally accepted minimum standard for Indigenous peoples' rights in relation to the environment as stated in Article 29:



Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources.”

- *United Nations Declaration on the Rights of Indigenous Peoples*

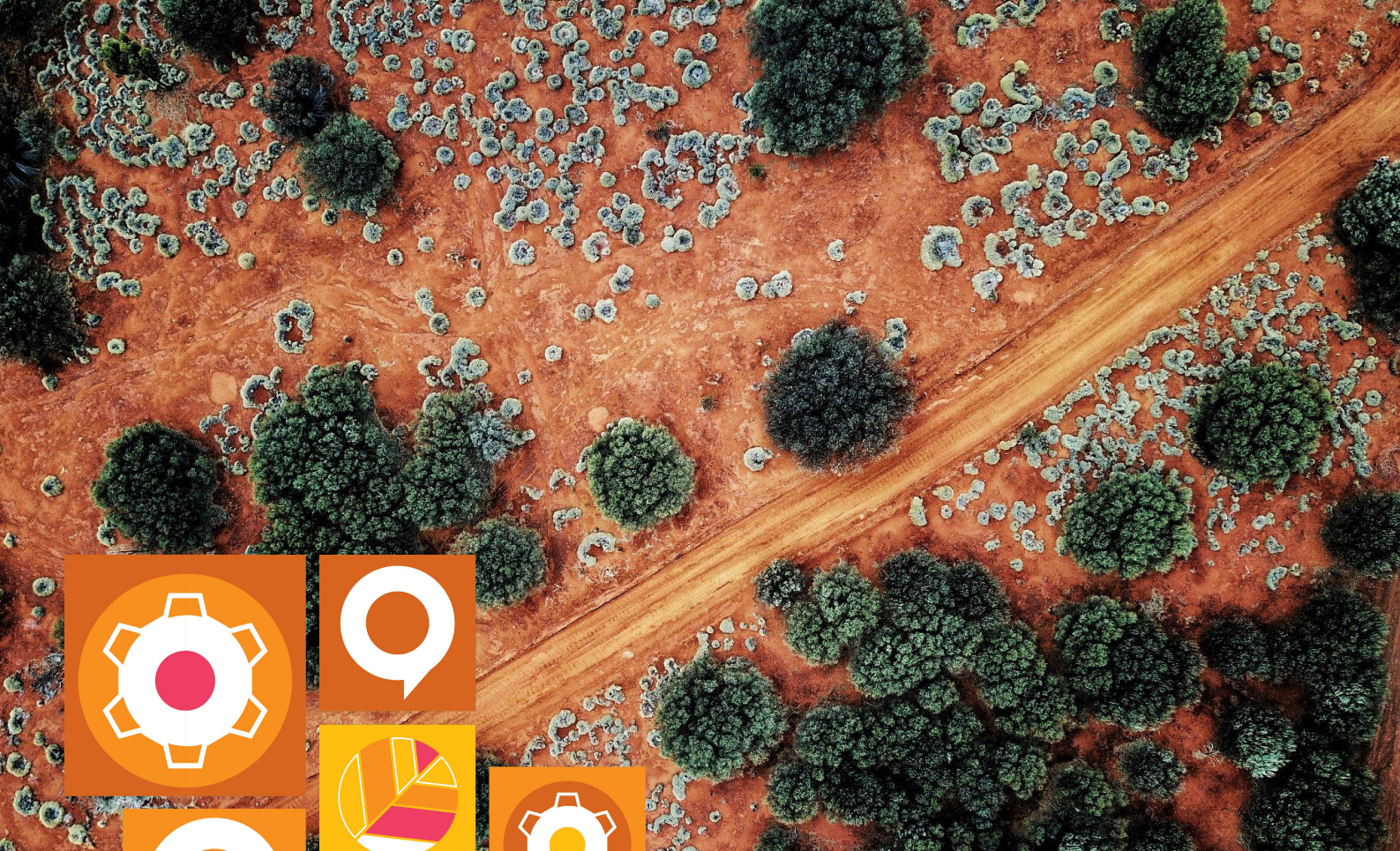
The impact of a loss in biodiversity for First Peoples

A decline in biodiversity presents a significant impact to First Peoples in Australia by threatening their environment and natural resources, impacting on their livelihoods and jeopardising the continuance of their cultural identities. Since colonisation, First Peoples have seen many instances of Country being disrespected, abused, damaged or destroyed with detrimental impacts on wellbeing. If not managed appropriately, a loss of biodiversity could result in a widening of the inequalities experienced by Australia's First Peoples.

Native Title

First Peoples ownership and stewardship of Country is formally recognised through land rights, native title and cultural heritage laws. With over 50 per cent of Australia's land mass formally recognised through native title, the management and preservation of biodiversity cannot be addressed without meaningfully engaging, and working in partnership with, First Peoples.





Indigenous Protected Areas

Indigenous Protected Areas (IPAs) are areas of land and sea Country managed by Indigenous groups in accordance with Traditional Owners' objectives. IPAs deliver biodiversity conservation outcomes for the benefit of all Australians, through voluntary agreements with the Australian Government.

Access and benefit sharing

As a signatory to the Nagoya Protocol, benefits arising from the use of genetic resources, which contribute to the conservation and sustainable use of biodiversity, should be shared fairly and equitably with First Peoples of Australia.

Traditional knowledge and Indigenous Cultural Intellectual Property

Over the millennia, First Peoples have developed extensive cultural knowledge, skills and stewardship to maintain Country and preserve biodiversity. This traditional knowledge represents Indigenous Cultural Intellectual Property (ICIP), which should be valued, respected and protected.

Economic development opportunities for First Nations businesses, communities and peoples

A biodiversity market for Australia will provide economic development opportunities for First Peoples' businesses, communities and individuals, driving greater employment and training opportunities, and ensuring future generations maintain traditional knowledge, traditions and cultures.

A biodiversity market for Australia should seek to ensure that First Peoples' contributions of caring for Country, protecting and sustaining natural resources, and preserving and maintaining biodiversity are valued through:

- land and sea management of national parks, reserves and other areas (for example, Indigenous Ranger Programs and commercial partnerships)
- management of IPAs
- biodiversity applications
- research
- licensing of traditional knowledge and ICIP

These opportunities will deliver social and economic benefits for First Peoples communities across Australia.

3.3 What next?

We recommend that the following conditions are considered prior to the establishment of a biodiversity market

1 Engagement with local stakeholders is critical to the successful design and implementation of a biodiversity market

It is crucial that significant stakeholder engagement is undertaken prior to the establishment of a biodiversity market, particularly with First Peoples, scientists, environmentalists, research and academic institutions, NGOs and community members, industry and philanthropic partners.

2 Greater recognition of First Peoples as critical guardians of biodiversity and holders of nature knowledge

Practices that are millennia old should be reconsidered or revisited to help restore greater biodiversity, including principles of restraint around only taking/using what is needed, rather than stripping ecosystems bare. As Traditional Custodians of the whole country, and rights holders of up to 50 per cent of the land and an increasing proportion of sea country too, challenges relating to biodiversity in Australia won't be solved without meaningful engagement with First Peoples.

3 A biodiversity market should not replace broader environmental conservation frameworks and regulation

Without necessary limits and safeguards, market-based mechanisms can undermine genuine conservation efforts by legitimising scientifically unsound policies and facilitating the continuation of high-impact activities, such as land clearing or fossil fuel usage.

4 Increased biodiversity and ecology expertise are required to ensure a market is effectively delivering biodiversity gains

Any biodiversity market mechanism should draw heavily on the wide-ranging expertise of environmental stewards and scientists who have specialised knowledge of the varying Australian ecosystems and species.

5 A biodiversity market should not include biodiversity offsets, and instead, prioritise biodiversity stewardship certificates solely for conservation outcomes

Offset schemes attempt to balance habitat destruction with gains elsewhere, which poses increased risk to an effective biodiversity market. There is a lack of evidence to show that offset schemes deliver the predicted biodiversity outcomes and there is risk that offset schemes result in a net loss of impacted biodiversity.

By contrast, biodiversity stewardship certificates (that are not used for offsetting) can be sold on the private market to companies wanting to invest in nature and enhance their environmental credentials. This would be particularly attractive to tourism operators, for example, along the Great Barrier Reef, where businesses are directly and tangibly impacted by biodiversity decline.

6 A transparent register of biodiversity certificates and transactions should be developed and made publicly available

A biodiversity market should be supplemented by a mechanism that ensures biodiversity 'transactions' are transparent, publicly available and ensure accountability, with ongoing monitoring and reporting of biodiversity outcomes.

7 Clearer delineation between biodiversity and carbon markets would ensure greater integrity of a biodiversity market

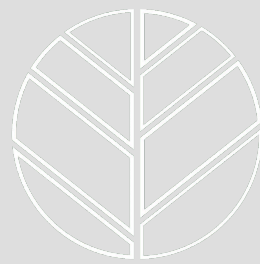
There is a risk that a biodiversity market may facilitate 'double dipping', where providers of biodiversity credits are able to sell the same credit in both carbon and biodiversity markets. Careful consideration should be given to the relationship and interactions between carbon and biodiversity markets to ensure the integrity of the market is not compromised.



Footnotes

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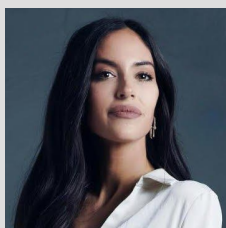




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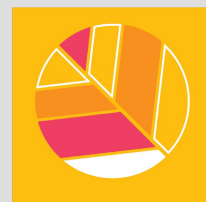
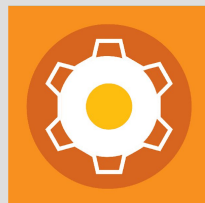
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