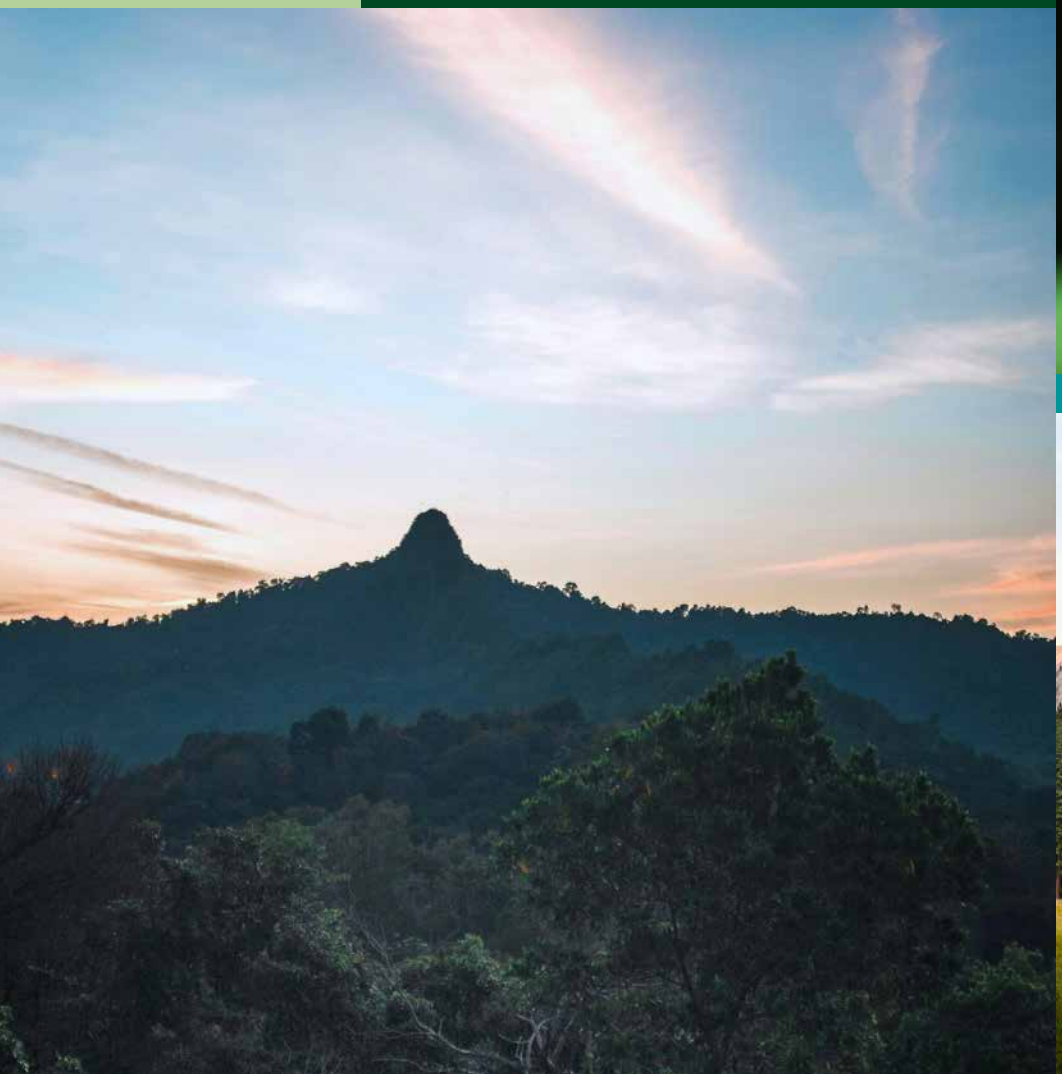
New Forests

Investing in a Nature Positive Future



Contents

Introduction

What is nature and biodiversity, and why are they important to investors?

Nature is the collective characteristics of the physical world, including plants, animals, the landscape, and other features and products of the earth. Biodiversity is more specific, referring to the diversity of life on earth, including genes, species, ecosystems and the interactions among them. Biodiversity is not only intrinsically valuable but provides important ecosystem services[1] to society including food, fibre, building materials, pollination, soil formation and nutrient cycling, and freshwater purification.

There would be no global economy and no civilisation without nature.

Over recent decades for most people there has been a growing, nagging concern about the size and scale of human society and how it is impacting nature and biodiversity. An estimated 1 million species are currently threatened with extinction – a potential catastrophe that has only occurred five times on Earth, the last time with the extinction of the dinosaurs.[2]

In recent years, the international community has been more actively focused on climate change, specifically, wrestling with policy frameworks to reduce greenhouse gas emissions to address climate warming. Climate change is an easily understandable problem; we need to stop increasing the concentration of greenhouse gases like carbon dioxide, methane and nitrogen oxide that trap heat in the atmosphere. We can reduce emissions by closing a coal-fired power plant and replacing it with renewable energy. We can pay farmers to protect forests and practice soil conservation. We can incentivise electric vehicles, battery storage and solar rooftops. Each of these actions creates a net benefit for the atmosphere which is shared by everyone.

However, nature and biodiversity loss are different from the atmosphere. Nature is a constantly evolving mosaic of ecosystems across space and over time. But there are also limits to what individuals and species can tolerate. As ecosystems lose species or become fragmented into small remnants, they lose resilience which can ultimately lead to ecological decline, loss of ecological production and services, and collapse.

For institutional investors, accounting for nature and climate adds a new and complex imperative to portfolio allocation, namely, how to choose investments that at a minimum do not increase nature loss and beyond that might even restore it. That is, how do investors create a Nature Positive investment portfolio, and what are the metrics needed to determine if we are succeeding or failing?

This paper explores the policy environment, mechanisms to incentivise conservation or regulate impacts on nature, implications and opportunities arising for investors, and the new tools that are emerging to take on this challenge.

While impacts on nature flow from every asset class, this paper focuses primarily on private real assets and particularly on forestry, agriculture and land management. These sectors are increasingly seen as converging into a new natural capital asset class offering potential solutions to global, biospheric and existential issues.

What is Nature Positive?

The term Nature Positive is used to describe circumstances where nature is being repaired and is regenerating, rather than declining.

The concept of Nature Positive is based on a global goal to halt and reverse nature loss by 2030 and achieve full and ongoing recovery by 2050. It calls on countries, businesses, investors and individuals to go beyond avoiding and reducing harm, to one which has a Nature Positive impact and restores nature, enriches biodiversity, stores carbon and purifies water.

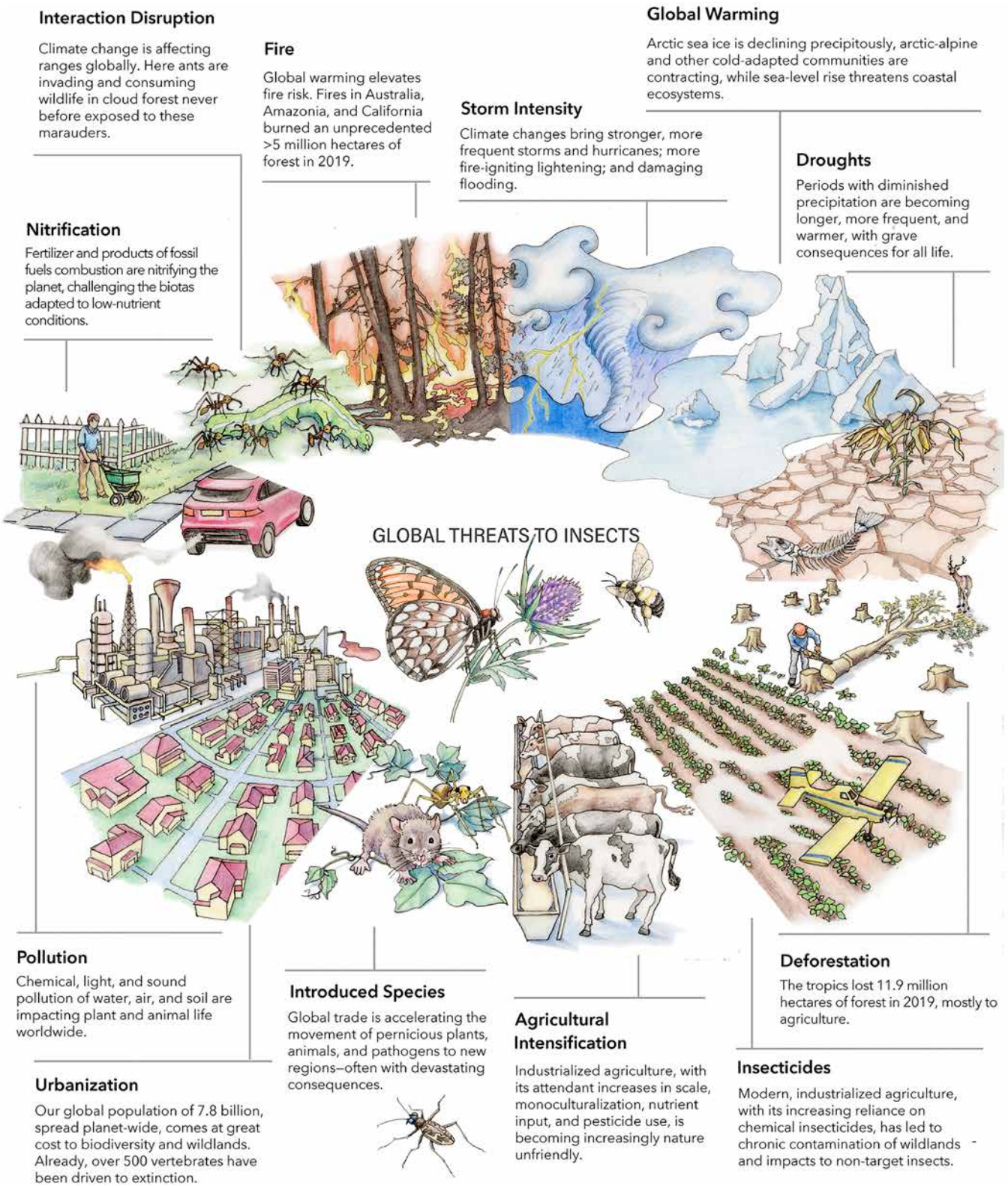
Major threats to biodiversity and nature

With a human population of almost 8 billion people, and a gross world product of close to $100 trillion per annum, impact on nature has grown. Multiple studies and impact assessment tools, such as the global footprint network,[3] the quantification of Human Appropriation of Net Primary Productivity (HANPP),[4] and the assessment of planetary boundaries,[5] show that the health of the biosphere is in a zone of rapidly increasing and systemic risk to human society.

How are changes to the biosphere occurring?

A diverse number of impacts on biodiversity are occurring in parallel, often with overlapping, additive and feedback interactions, as shown in Figure 1. These include changes in land use over time from increasing urbanisation and industrialisation, overuse of petrochemical pesticides, agricultural expansion and intensification, invasive species, air and water pollution, alterations to nutrient cycles, changes to fire regimes, and myriad other drivers of habitat fragmentation and degradation, including severe weather events as a result of climate change.

Figure 1. The range of impacts affecting biodiversity in parallel[6]



The world faces an intractable situation. On the one hand, the rising human population and aspiration for a continuing improvement in the standard of living and wealth drives increasing need for land for production systems, and the further need to continuously intensify those production systems to keep up with demand. On the other hand, biodiversity is rapidly declining, ecosystems are fragmented and even conservation areas become less viable as they become unconnected islands of nature.

Degraded ecosystems and isolated habitats are therefore more susceptible to the many overlapping and interactive impacts described in Figure 1, which can result in cascading effects and feedback loops. For example, a degraded ecosystem tends to favour the expansion of invasive species, feral animals, diseases and pests, disrupting existing food chains, habitat and ecosystem functions, which in turn leads to more species extinctions. Climate change further exacerbates the problem through temperature changes that impact species habitat ranges and, therefore, ecosystem structure, and by increasing the frequency and severity of wildfire events, windstorms, droughts and floods.

The recognition that this has reached a crisis point has been the catalyst for the rise of global emphasis on biodiversity conservation, nature conservation and a Nature Positive policy goal.

Net zero and Nature Positive are rallying cries for systemic change in land use to create a sustainable global economy.

Maasai Mara, Kenya

International Policy Processes

In this next section, we have distilled the most relevant international policy frameworks for investors before discussing the reporting requirements and investment opportunities.

UN Convention on Biological Diversity

The United Nations Convention on Biological Diversity (CBD) was negotiated at the Rio Earth Summit in 1992, and almost 200 countries have ratified the Convention since entering into force in 1993.[7,8]

The CBD Secretariat is based in Montreal, Canada, and parties meet every two years, unlike the United Nations Framework Convention on Climate Change (UNFCCC), which meets annually. Over the 30 or so years since the Earth Summit, it would be fair to say that the CBD has been the less glamorous, and poorer, cousin to the UNFCCC.

Figure 2 provides an abbreviated timeline of major developments in the CBD.

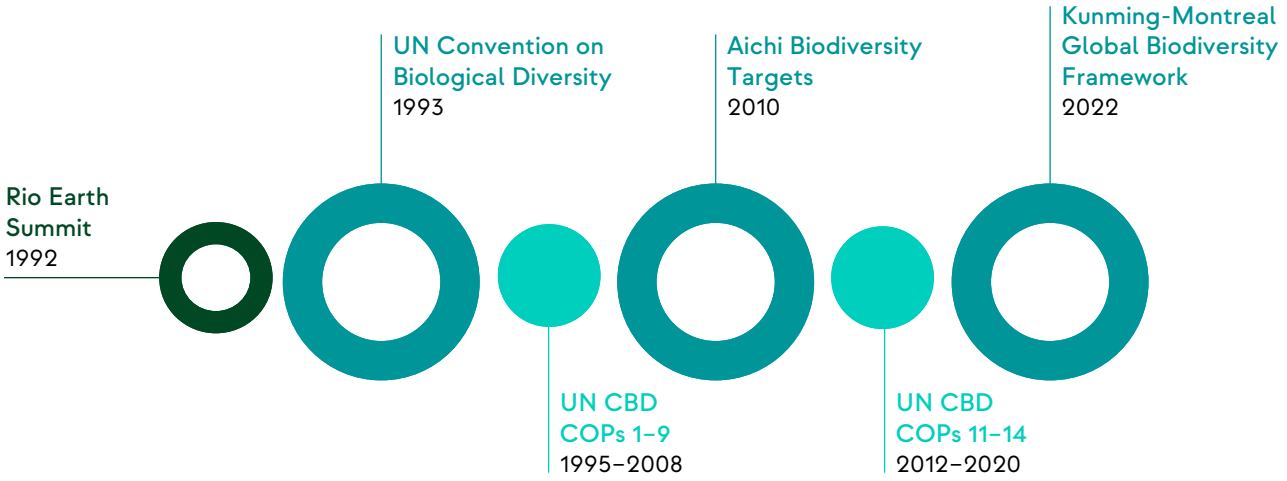
Aichi Biodiversity Targets

By 2010, there appeared to be gathering momentum to establish a goal of no net loss of biodiversity, and the Aichi Biodiversity Targets were agreed.[9] These targets included for the first-time, explicit goals for 17% of terrestrial and 10% of coastal and marine ecosystems to be conserved in protected areas and other effective area-based conservation measures by 2020.

Kunming-Montreal Global Biodiversity Framework

From the most recent CBD COP15 held in Montreal, emerged the Kunming-Montreal Global Biodiversity Framework.[10] This framework represents a step up in ambition, raising the Aichi Biodiversity Targets to a goal of 30% of all terrestrial, inland water areas, and marine and coastal areas to be conserved by 2030. The CBD has emerged as an international policy priority alongside the UNFCCC and climate change. From this, the twin goals of reaching net zero greenhouse gas emissions and restoring nature by 2050 have become the central driver of international environmental policy processes.

Figure 2. Abbreviated timeline of UN CBD



Current Initiatives

There is growing pressure on business to disclose their sustainability related performance as well as risks and opportunities. As a result, there is also a growing need to create standardised approaches to measuring, monitoring, accounting and reporting on biodiversity metrics and progress towards Nature Positive outcomes.

Widening engagement and growing energy around biodiversity conservation, and the need to become Nature Positive, has spawned a range of initiatives including:

The Nature Positive Initiative

In late 2023, a coalition of 27 of the world's largest nature conservation, business, and finance organisations came together with the aim of driving a Nature Positive society including global alignment around the definition, use and integrity of the term Nature Positive.[11]

Task Force for Nature-Related Financial Disclosures

Alongside the Task Force on Climate-related Financial Disclosures (TCFD), a Task Force on Nature-related Financial Disclosures (TNFD) released its reporting recommendations and guidance in 2023.[12] Creating standardised climate and nature disclosures by business and investors starts to create transparency in (i) the risks faced by businesses who are causing impacts, (ii) who may be affected by systemic climate and nature risks, or (iii) increasing policy measures to reduce emissions or impacts on nature. These specific disclosures will, in turn, be integrated with the broader sustainability disclosure framework being established by the International Sustainability Standards Board.[13]

Bay of Fires,
Tasmania, Australia

Towards a Nature Positive Portfolio

The rising emphasis on becoming Nature Positive will become a compliance and reporting issue for institutional investors, and can also be viewed as an investment opportunity.

This section first considers compliance and reporting issues, and later addresses investment opportunities. As a starting point, the TNFD has released its recommendations, which are aligned with the previously developed recommendations of the TCFD.[14] As shown in Figure 3, the disclosures cover four areas—governance, strategy, risk and impact management, and metrics.

An investor needs to understand the context of their assets and the impacts of their investments on nature, both up and down the supply chain. Different ecosystems have different issues to consider, but there are generally three priorities areas for monitoring and reporting:[15]

1. Monitoring species to avoid extinction or declines in various forms of biodiversity.
2. Understanding broader ecosystem processes, for example, freshwater regulation and water quality, capacity of species to migrate for resources or genetic diversity, carbon sequestration and storage, and natural fire regimes.
3. Tracking the extent and intactness of ecosystems and the function of species within those ecosystems.

There have been tremendous advancements in the technologies needed to collect data on these attributes. Remote sensing capabilities from Earth orbiting and low Earth orbiting satellites, has been steadily improving with new satellite systems and platforms being continuously launched.[16] These can support mapping ecological extent, connectivity of ecosystems, and impacts like deforestation.

There are also airborne sensors such as Lidar[17] and drone-based sensors like thermal infrared[18] or radio telemetry[19] that can detect individual animals, identify species, and track tagged individual animals. On ground measurements are also evolving from tools like camera traps, bioacoustics linked with artificial intelligence, and field surveys to new techniques like eDNA, which can identify species presence from DNA traces.[20]

There are also citizen science initiatives where members of the public contribute bird or animal sightings via smart phones, which can help determine timing of migrations, changes in species or habitat composition, or the presence and distribution of endangered species. Information that may have previously been considered infeasible to collect is increasingly becoming available.

Whahariki Beach, Puponga, New Zealand

Figure 3. TNFD Disclosure Framework[21]

TNFD Recommended Disclosures			
Governance	**Strategy**	**Risk and impact management**	**Metrics and targets**
Disclose the organisation's governance of nature-related dependencies, impacts, risks and opportunities.	Disclose the effects of nature-related dependencies, impacts, risks and opportunities on the organisation's business model, strategy and financial planning where such information is material.	Describe the processes used by the organisation to identify, assess, prioritise and monitor nature-related dependences, impacts, risks and opportunities.	Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.
Recommended disclosures **a.** Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities. **b.** Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities. **c.** Describe the organisation's human rights policies and engagement activities, and oversight by the board and management, with respect to indigenous peoples, local communities, affected and other stakeholders, in the organisation's assessment of, and response to, nature-related dependencies, impacts, risks and opportunities.	**Recommended disclosures** **a.** Describe the nature-related dependences, impacts, risks and opportunities the organisation has identified over the short, medium and long term. **b.** Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans to analysis in place. **c.** Describe the resilience of the organisation's strategy to nature-related, risks, and opportunities, taking into consideration different scenarios. **d.** Disclose the locations of assets and/ or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.	**Recommended disclosures** **a.** (i) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations. **a.** (ii) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s). **b.** Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities. **c.** Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.	**Recommended disclosures** **a.** Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management processes. **b.** Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature. **c.** Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.

The Economics – Investment Opportunities

How do we ensure conservation of nature?

There are many reasons for the failure of conservation efforts to date, but economic value is considered to be a principal cause. A lowland dipterocarp rainforest in Asia might have been partially logged but still retains an immense diversity of species. However, the forest may only be worth $300-500 per hectare for the present value of future timber harvest revenues. If the area is converted to palm oil plantation, for example, at a cost of $4,000 per hectare, it becomes worth $20,000 per hectare once it is producing crude palm oil in four or five years. That is a compelling arbitrage opportunity in economic terms.

Similarly, the valuation of a rural property in Australia may indicate a value of AUD$10,000 per hectare for existing farmland, while the areas of natural ecosystems on the same property that are protected by regulation from conversion might be valued at AUD$500 per hectare. Asking the farmer to restore some of their land to conservation is like asking to convert AUD$10,000 hectares to AUD$500 hectares. But consideration of the economic and environmental benefits of carbon projects and biodiversity projects in the future, can lead to better commercial and environmental outcomes.

Market-based instruments and policy measures. Will we see a price for biodiversity conservation?

Several market-based mechanisms legislated and implemented by governments as cap-and-trade schemes, and outside government regulation in voluntary carbon markets, have been used to reduce greenhouse gas emissions.

Major governmental programs include the European Union Emissions Trading Scheme, the Western Climate Initiative, the California Air Resources Board Cap-and-Trade Program, the Regional Greenhouse Gas Initiative, the New Zealand Emissions Trading Scheme, and the Australian Emissions Reduction Fund and Safeguard Mechanism,[22] among others.

On the voluntary side, major schemes include Verra, the Gold Standard, Climate Action Reserve, and the American Carbon Registry, among others.[23] Under the UNFCCC Paris Agreement there are also provisions to allow 'internationally transferred mitigation obligations' (ITMOs) between national governments under Article 6 of the agreement.

The World Bank estimates, as of 2024, some 20 carbon pricing regimes are currently in force and being regulated by governments, covering 13% of global greenhouse gas emissions.[24]

Not surprisingly, many intergovernmental, non-governmental, and governmental initiatives have begun to consider implementing market-based mechanisms for biodiversity, including credits, or offsets.

Several biodiversity-related regulatory schemes are already implemented by governments, and some, like the US wetland, stream, and endangered species banking arrangements, have been operating for decades.[25] Estimates place mitigation banking credit turnover is in the range of $6 to $12 billion per annum.[26] In 2020, the OECD estimated that global biodiversity finance, including direct government payments, was between $78 to $91 billion per annum.[27] The report also noted, however, that governments spend in the order of $500 billion per annum on subsidies and payments that were potentially harmful to biodiversity.[28]

Biodiversity markets are not fungible

Biodiversity markets have a fundamental difference from greenhouse gas emissions reduction markets. Fungibility, the ability to trade across markets, is feasible in greenhouse gas markets, where a tonne is a tonne. However, biodiversity markets are not fungible, and pricing may range widely across different eco-regions or species.[29] Because biodiversity is local and heterogeneous, most efforts to date have created localised markets, such as eco-regions, ecosystem types, or species-specific measures, within which certificates, credits, or offsets can be utilised or transferred. Experience suggests that areas where there has been substantial loss of ecosystems have resulted in continuing or high impacts on biodiversity. Where restoration and conservation options are limited, we would expect to see higher prices for biodiversity credits or offsets in a regulated market.

Yosemite Valley, United States

Demand for an international solution is growing

The positive news is that global recognition of underlying drivers and demand for solutions is growing. The International Advisory Panel on Biodiversity Credits,[30] the Nature Finance sponsored Task Force on Nature Markets,[31] the World Economic Forum Biodiversity Credits Initiative,[32] and the Biodiversity Credit Alliance are some of the initiatives exploring credible approaches to international biodiversity crediting.[33]

These initiatives are struggling with some of the same issues, like additionality, that are central to the design and success of carbon credit markets. Different types of credits or certificates can be considered, for example there may be credits for:

- Conserving existing natural ecosystems, habitats, or species,
- Protecting ecosystems that were under threat of conversion to agriculture or urban sprawl,
- Restoring ecosystems or increasing the integrity of ecosystems, for example by controlling invasive species or increasing habitat connectivity.

> At the international level, represented by the CBD and Kunming-Montreal Global Biodiversity Framework, it seems likely that the commitment to achieve the long-term conservation of 30% of the world's ecosystems will need market-based mechanisms.

In many geographies, critical conservation and restoration priorities including opportunities to connect protected areas, will need broader engagement with private landowners and the private sector more broadly. This may include market-based mechanisms, conservation easements, pay for performance systems, land swaps between the public and private sector and other approaches.

Inevitably there is a need to create value for nature, and price signals that make it more economically attractive to conserve and restore nature, than to destroy it.

Implication for investors. What is the concept of a Natural Capital asset class? How to invest in biodiversity?

In addition to the compliance, risk management, and disclosure aspects of biodiversity and Nature Positive investments, there are also important changes in the possibilities for sustainable land-based investments.

Over the past several years, land-based investments have increasingly been recognised as foundational to climate change mitigation and adaptation solutions, restoration and conservation of nature, and myriad ecosystem services like regulating freshwater flows and quality, pollination and food security, and provision of renewable, sustainable materials for society. The silos of forestry, agriculture, and conservation finance are breaking down, and assets are being recast into what is increasingly becoming known as a "Natural Capital" asset class.

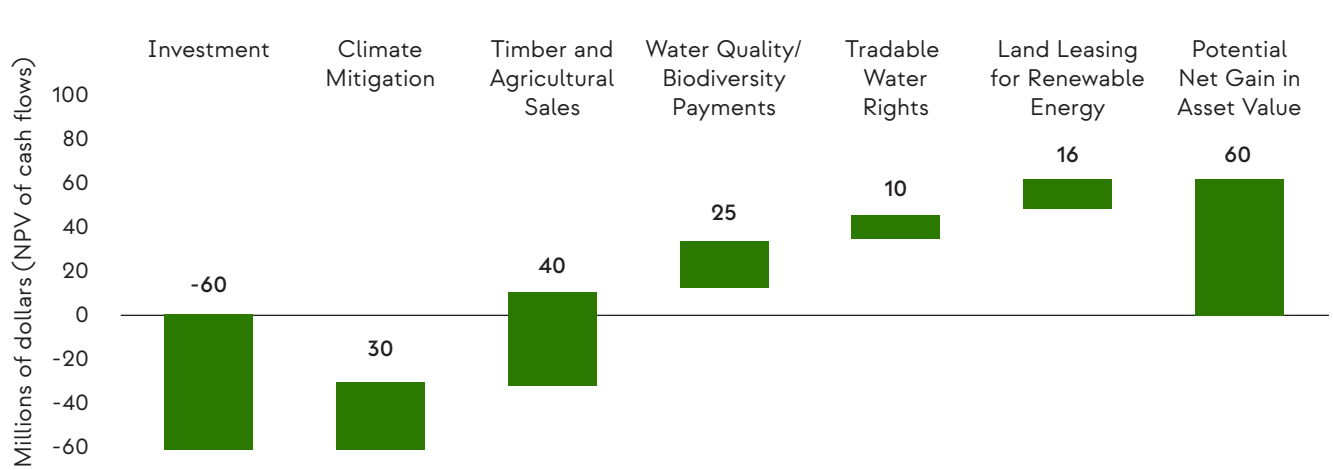
From an investment perspective, land-based investments, collectively, are seeing a rise in option value. For example, where an investment previously would be based on conventional returns from the sale of timber or agriculture produce, now there may be exposure to carbon markets, biodiversity markets or payments, tradeable water rights, watershed management payments, and wind farm or solar farm leases. This can lead to new sources of revenue, but also management challenges in re-optimising land use allocation against multiple dynamic price signals (see Figure 4).

Opportunities to invest in biodiversity will vary based on the evolving nature of the price signals to which assets are exposed. There may be several types of opportunities:

- Payments for **natural habitats retained** on a property. These might be payments for ongoing conservation management as part of integrating the conservation areas into a national biodiversity conservation network.
- Payments for **enhanced conservation**, such as eradicating or controlling invasive species, feral animals, and pests, promoting habitat enhancement like nesting boxes, or more intensive species monitoring.
- Payment or credits for **nature restoration**. Often restoring areas like wetlands, riparian areas adjacent to rivers and streams, rocky outcrops, or unique soil types can be critical to rare or endangered species with very specific habitat niche requirements.
- Investment products aimed at creating revenues from **protecting life below water** (aligned with SDG 14). For example, a salmon farming company committing to more sustainable aquaculture practices.
- Investment products aimed at creating revenues from **protecting life above water** (aligned with SDG 15). For example, a Norwegian company making machines to recycle plastic bottles.

The way in which biodiversity attributes are monetised may be a function of local policy choices, but could include, sale of conservation easements, payments for performance outcomes, grants, credit or offset market payments or tax deductions. The option value can prove transformative to asset values.

Figure 4. A hypothetical investment in a mixed forestry and agriculture property with a range of option values can create both a diversification of returns and increased asset value.



Source: New Forests' data, 2024.

As an example, rural hill country land for sheep grazing in New Zealand was worth between NZD$2,500 to NZD$4,000 per hectares 10 years ago. However, when the carbon price in New Zealand reached NZD 90 per tonne of carbon dioxide equivalent, the value of this rural land rose to be worth NZD$17,000 per hectare. Effectively the net present value of the expected carbon revenues has been capitalised into the land value. Could the same be true for biodiversity? Should investors start to look for areas of critical habitat or restoration opportunities to integrate into investment portfolios before these price signals emerge?

Analytical tools including geospatial and temporal modelling

A new paradigm of land management necessitates reconsidering decision-making processes and support systems. As we look forward, there will be competing objectives for food and timber production, the full implementation of the Kunming-Montreal Global Biodiversity Framework, renewed climate mitigation and adaptation targets relative to the Paris Agreement goals, renewable energy developments, and freshwater quality and regulation. How do we start to rationalise these competing objectives?

In the past, and still today, most land management occurs in silos. Forestry operators manage timber plantations and harvesting in semi-natural managed forests. Agriculture is managed by farmers and agribusiness operators. Conservation has tended to be managed by indigenous peoples, governments, and nature trusts.

Much of land use reflects historical values, and the allocation of land is unlikely to be optimal looking forward. An estimate from Australia suggests that the bottom 20% of cropping farms lose an average of AUD$57,000 per annum, in other words a -0.4% return on capital per annum.[34] In many areas of the world, agriculture receives hundreds of billions of dollars in subsidies each year,[35] which can distort land use and support unprofitable operations.

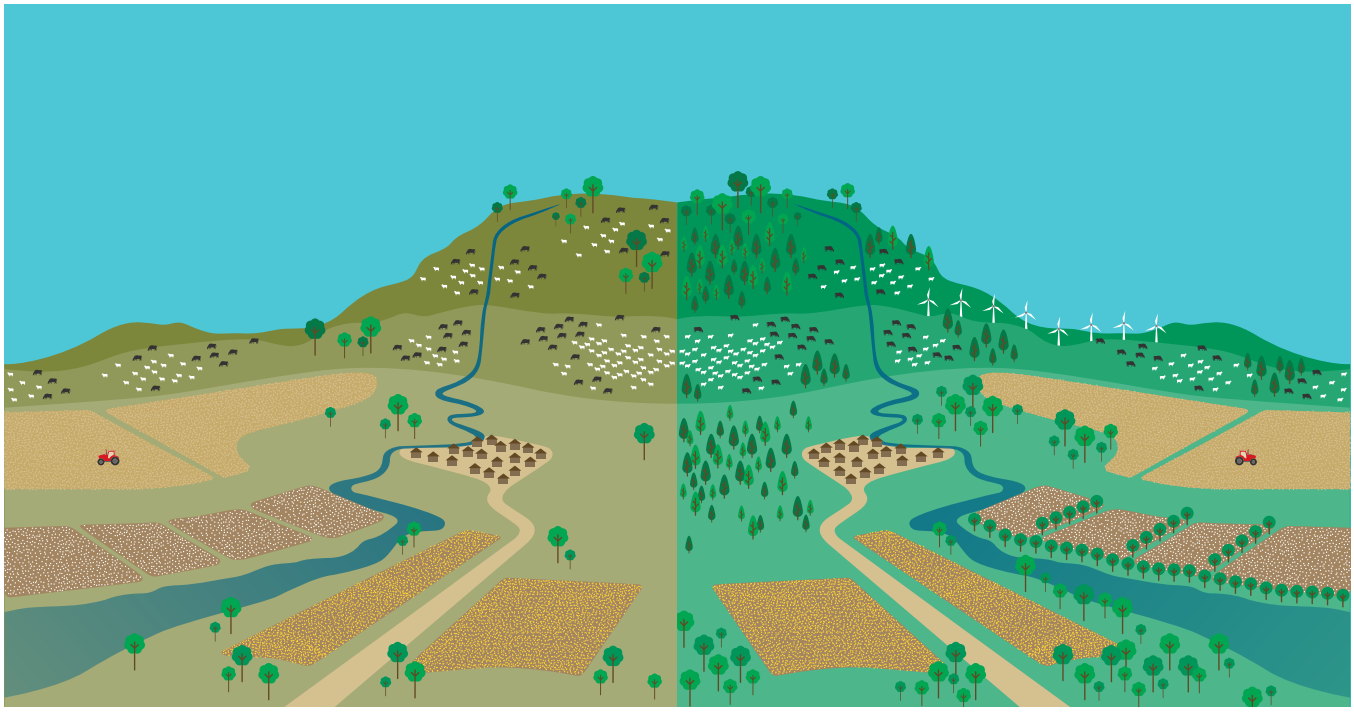
Investors should consider new analytical approaches to optimise land use that realise the option values discussed above. For example, geospatial modelling can layer soils, topography, and climate data to create additional agricultural productivity for various cropping and grazing options. Linked with operating costs these models can map areas of highest and lowest economic productivity for agriculture as well as forestry plantations. Geospatial modelling can also identify and visualise wind profiles, solar radiation zones, and hydrological functions[36] in addition to optimising for conservation management to ensure key species maintain viable populations.[37]

It is also now feasible to assess alternative land allocations on a broader landscape scale, and management regimes for carbon stocks and carbon sequestration potential. The challenge then is to integrate price signals; for agricultural and forestry commodities, for carbon offset values, biodiversity credits, watershed values, and renewable energy development. This leads to an ability to allocate land in a more granular, profitable, and diversified approach, which should drive up asset values and increase net cash yields.

These various price signals are expected to be dynamic and also have potentially different risk factors and associated discount rates. But there will likely also be synergies. Recreating woodland conditions may improve grazing productivity as well as providing timber, carbon sequestration, and habitat improvements. Restoring riparian zones and wetlands or creating connectivity in conservation areas on areas for agriculture can generate biodiversity benefits at little cost to production system outputs.

Modern windfarms can be embedded in extensive forestry plantations, increasing profitability and reducing public concerns about the visible landscape. Figure 5 shows a hypothetical landscape transition to incorporate enhanced biodiversity conservation, climate mitigation and water quality improvements. Benchmarking this landscape change suggests an increase in total revenue and a diversification of the economic base which should reduce the risks associated with the exposure to a limited number of commodity market price signals.

Figure 5. Hypothetical landscape transition to incorporate biodiversity enhancement, climate solutions and improved water quality in an agricultural landscape



Present	Future
The existing rural landscape	Planted forests in the landscape create a more diverse economy and a healthier environment

Land use

Output	Area (ha)	Revenue (000s)
Sheep	250,000	25,000
Cattle	200,000	40,000
Wheat	250,000	118,000
Canola	150,000	112,000
Cotton	150,000	490,000
Total	**1,000,000**	**785,000**

Land use

Output	Area (ha)	Revenue (000s)
Sheep	150,000	18,000
Cattle	120,000	28,000
Wheat	200,000	94,000
Canola	120,000	90,000
Cotton	150,000	490,000
Timber	26,000	12,000
Bioenergy	117,000	9,000
Charcoal	117,000	14,000
Carbon credits		41,000
Salinity credits		26,000
Total	**1,000,000**	**822,000**

Environmental problems	Environmental benefits
• Dryland salinity increasing	• Dryland salinity reduced
• Rising water tables and saline discharge	• Lower water tables and clean discharge
• Nutrients leaching into waterways	• Nutrients retained on farm
• Low biodiversity	• Biodiversity increased
• Soil erosion and turbid waterways	• Soil erosion reduced

Source: New Forests, 2024.

Using New Forests to unlock biodiversity opportunities

There are complexities and multiple competencies necessary to understand the financial characteristics of this future-looking natural capital asset class for investors, but there are also opportunities. Traditional portfolio allocation considers allocations to a suite of discrete asset classes like forestry, agriculture, infrastructure, and possibly conservation finance. Blending together a set of dynamic, potentially uncorrelated, and potentially unproven revenue streams raises the question of where natural capital fits, and it may be preferable to consider a range of different investment structures and approaches.

New Forests has almost two decades of experience and a strong track record in seeking to enhance risk and returns from nature-based solutions and land-based investments.

While there are many needs for extensive active management experience to leverage various investment strategies, one example might be an investor deciding to take direct exposure to a subset of natural capital attributes while contracting-out others. In this scenario, a landscape investment fund may take on ownership of land and lease out forestry and agriculture production to specialist operators, lease parts of the land for renewable energy developments, and sell third party conservation easements on other areas. Or forestry and agriculture investors may take the land, forestry, and agriculture market risk but outsource development of renewable energy projects, carbon projects, and biodiversity projects on a profit share or land leasing basis.

In emerging markets, investors can use blended finance or other investment platforms that bring together different types of capital from public, private, and philanthropic sectors to fund climate, biodiversity, and community benefit components. Corporates may also be engaged in these investment vehicles as off-takers of carbon credits or biodiversity credits at agreed contracted prices. New partnerships with indigenous peoples, ENGOs and community groups like land trusts can also bring different sources of expertise and support for climate mitigation and nature conservation elements.

Risk management tools like the Multilateral Investment Guarantee Agency (MIGA) of the World Bank,[38] first loss agreements, grant funding for due diligence and biodiversity project development that reduces transaction costs, concessional debt facilities and grant funding for technical capacity building can all increase the attractiveness of emerging market investments to private sector investors. Ultimately specialist managers will be needed to package up these components and bring these investment opportunities to the market.

Sierra Nevada Red Fox

Northern Spotted Owl

Conclusions and Looking to the Future

Investors cannot avoid the recognition that the world faces a substantial risk of irreversible nature loss alongside continuing climate change and associated natural disasters.[39]

It is also apparent that these two issues are interlinked—increased impacts from climate change accelerate the loss of nature, and increased loss of nature reduces the resilience to climate change. This paper has aimed to translate these issues into practical terms for investors.

There is both a risk management, disclosure and compliance component to an investor response, as well as an investment strategy component. The risk, disclosure and compliance approach will be managed through the structured process of the TNFD recommendations and flow into the ISSB reporting framework alongside TCFD reporting. This creates a standardised methodology that can be utilised across multiple types of assets and forms of capital investment.

The investment strategy side may need to consider how to manage risks from physical impacts like severe weather events, wildfire, diseases, and the spread of weeds. However, it can also be seen as an opportunity to recast land management investments into a wider context of natural capital. Undertaking more sophisticated geospatial and temporal analysis of land management will unlock new sources of option value and may allow investors to have a capability to deliver enhanced risk adjusted returns as well as portfolio level decarbonisation and Nature Positive outcomes.

We are in a race to stabilise and restore as much of our biodiversity as possible before it is lost. How we invest capital in the future will be central to the outcome.

Some New Forests case studies relating to biodiversity

Enhancing the Sun Bear population in Indonesia

Hutan Ketapang Industri (HKI) in Indonesia, operates a large-scale rubber plantation located in West Kalimantan, Indonesia. In 2022, New Forests helped to develop a "Sun Bears Corridor Development Program" to enhance habitat connectivity between High Conservation Value (HCV) natural forest habitat areas within its concession.

Efforts were focused on the northern blocks of the HKI concession area where HKI planted native trees across several corridors to support sun bears and additional biodiversity. Tree species selection included analysis of suitability for orangutan forage and nesting, in addition to species that are considered likely to successful establish select corridors given site specific conditions.

Protecting biodiversity in a US forest forever

In August 2024, New Forests transferred ownership of Trinity Headwaters, an almost 11,000 acre property situated in northern California, to two non-profit organisations Pacific Forest Trust and the Watershed Center. Nestled between the iconic landmarks of Mount Shasta, Castle Crags and Mount Eddy, the property consists of mixed conifers, pine, white and red fir, and is considered a hot spot for botanical diversity due to the presence of uncommon serpentine soils making it a home to rare plants.

Additionally, the property supports 44 rare or threatened species such as Pacific marten, fisher, California wolverine, Cascade frog, and the Sierra Nevada red fox. The Pacific Trust has secured a permanent conservation easement which ensures the permanent protection of the biodiversity, native fish and wildlife habitats, and water resources for the State of California.

Trinity Headwaters, California, United States

References

1 Reagan Pearce, "Explainer: What Are Ecosystem Services?," Earth.Org, January 3, 2023, https://earth.org/what-are-ecosystem-services/.

2 "Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services" (IPBES, May 4, 2019), https://doi.org/10.5281/ZENODO.3831673.

3 Global Footprint Network, "Global Footprint Network," Global Footprint Network, 2024, https://www.footprintnetwork.org/.

4 Helmut Haberl, Karl-Heinz Erb, and Fridolin Krausmann, "Human Appropriation of Net Primary Production: Patterns, Trends, and Planetary Boundaries," *Annual Review of Environment and Resources* 39, no. 1 (October 17, 2014): 363–91, https://doi.org/10.1146/annurev-environ-121912-094620.

5 Katherine Richardson et al., "Earth beyond Six of Nine Planetary Boundaries," *Science Advances 9*, no. 37 (September 15, 2023): eadh2458, https://doi.org/10.1126/sciadv.adh2458.

6 David L. Wagner et al., "Insect Decline in the Anthropocene: Death by a Thousand Cuts," *Proceedings of the National Academy of Sciences* 118, no. 2 (January 12, 2021): e2023989118, https://doi.org/10.1073/pnas.2023989118.

7 UNCBD Secretariat, "The Convention on Biological Diversity" (Secretariat of the Convention on Biological Diversity, July 1, 2024), https://www.cbd.int/convention.

8 While United States President George H. W. Bush declined sign on to the CBD at Rio, US President Bill Clinton did sign the convention documents in 1993. However, the CBD has never been ratified by the US congress and the US remains an observer to the process.

9 UNCBD Secretariat, "Aichi Biodiversity Targets," Convention on Biological Diversity (Secretariat of the Convention on Biological Diversity, September 18, 2020), https://www.cbd.int/sp/targets.

10 UNCBD Secretariat, "Kunming-Montreal Global Biodiversity Framework" (Secretariat of the Convention on Biological Diversity, February 14, 2024), https://www.cbd.int/gbf.

11 Nature Positive Initiative, "Nature Positive – A Global Goal for Nature," https://www.naturepositive.org/, June 21, 2024, https://www.naturepositive.org/.

12 TNFD, "Taskforce on Nature-Related Financial Disclosures (TNFD)," accessed July 8, 2024, https://tnfd.global/.

13 IFRS, "International Sustainability Standards Board (ISSB)," 2024, https://www.ifrs.org/groups/international-sustainability-standards-board/.

14 TCFD, "Task Force on Climate-Related Financial Disclosures (TCFD)," Task Force on Climate-Related Financial Disclosures, accessed July 8, 2024, https://www.fsb-tcfd.org/.

15 Nature Positive Initiative, "Nature Positive Resources," https://www.naturepositive.org/, accessed July 8, 2024, https://www.naturepositive.org/resources/.

16 See, for example, (i) GEDI, "GEDI Ecosystem Lidar," GEDI, 2024, https://gedi.umd.edu/.; (ii) "Planet Satellite Imaging," Planet, accessed July 19, 2024, https://www.planet.com/.; (iii) ICEYE, "SAR Data," accessed July 8, 2024, https://www.iceye.com/sar-data.

17 OpenTopography, "What Is Lidar?," OpenTopography, accessed July 18, 2024, https://opentopography.org/lidar_basics.

18 Hanne Lyngholm Larsen et al., "Drone with Mounted Thermal Infrared Cameras for Monitoring Terrestrial Mammals," *Drones* 7, no. 11 (November 18, 2023): 680, https://doi.org/10.3390/drones7110680.

19 Wildlife Drones, "Wildlife Drones - Take Your Animal Tracking to New Heights," Wildlife Drones, accessed July 8, 2024, https://wildlifedrones.net/.

20 See, for example, (i) UK Natural History Museum, "Environmental DNA: What Is It and How Can It Help Us Protect Wildlife?," accessed July 8, 2024, https://www.nhm.ac.uk/discover/what-is-environmental-dna-edna.html. and (ii) Lucy Almond et al., "The State of Nature Tech: Building Confidence in a Growing Market" (Nature4Climate, October 2023), https://nature4climate.wpenginepowered.com/wp-content/uploads/2023/10/N4C-The-state-of-nature-tech-final.pdf.

21 TNFD, "Getting Started with Adoption of the TNFD Recommendations" (Taskforce on Nature-related Financial Disclosures, September 2023), https://tnfd.global/publication/getting-started-with-adoption-of-the-tnfd-recommendations/.

22 European Commission, "International Carbon Market," 2024, https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/international-carbon-market_en.

23 IFAC, "Understanding the Voluntary Carbon Markets," December 1, 2023, https://www.ifac.org/knowledge-gateway/discussion/understanding-voluntary-carbon-markets.

24 World Bank Group, "Pricing Carbon," Text/HTML, World Bank, accessed July 8, 2024, https://www.worldbank.org/en/programs/pricing-carbon.

25 OW US EPA, "Mitigation Banks under CWA Section 404," Overviews and Factsheets, June 16, 2015, https://www.epa.gov/cwa-404/mitigation-banks-under-cwa-section-404.

26 William Coleman, "Opinion Nine Steps Towards Doubling The Value Of US Mitigation Markets," Ecosystem Marketplace (blog), December 21, 2015, https://www.ecosystemmarketplace.com/articles/opinion-nine-steps-towards-doubling-the-value-of-us-mitigation-markets/.

27 OECD, "Biodiversity," 2024, https://www.oecd.org/en/topics/sub-issues/biodiversity.html.

28 Ibid.

29 Anecdotally, New Forests has seen wetlands mitigation credit prices per acre in the United States ranging from less than $10,000 to over $100,000, depending on supply and demand for the credits within a specific hydrological region.
30 IAPB, "International Advisory Panel on Biodiversity Credits (IAPB)," 2024, https://www.iapbiocredits.org/.
31 Nature Finance, "Making Nature Markets Work: Shaping a Global Nature Economy in the 21st Century" (Taskforce on Nature Markets: Nature Finance, August 2023), https://www.naturefinance.net/resources-tools/making-nature-markets-work/.
32 World Economic Forum, "Financing for Nature," Financing for Nature, 2024, https://initiatives.weforum.org/financing-for-nature/home.
33 Biodiversity Credit Alliance, "Definition of a Biodiversity Credit," Issue Paper, May 2024, https://www.biodiversitycreditalliance.org/.
34 Dale Ashton, Quin Welsford-Brink, and Jay Ryder, "Financial Performance of Cropping Farms 2021–22 to 2023–24," June 28, 2024, https://doi.org/10.25814/BAJ6-DR22.
35 USDA ERS, "Farm Sector Income & Finances: Farm Sector Income Forecast," U.S. Department of Agriculture Economic Research Service, February 7, 2024, https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast/.
36 USGS, "Hydrologic Cycle and Interactions," accessed July 8, 2024, https://pubs.usgs.gov/circ/circ1139/htdocs/natural_processes_of_ground.htm.
37 Yicheng Wang et al., "Optimizing Conservation Planning for Multiple Cohabiting Species," ed. Lyi Mingyang, *PLOS ONE* 15, no. 6 (June 22, 2020): e0234968, https://doi.org/10.1371/journal.pone.0234968.
38 World Bank Group, "Multilateral Investment Guarantee Agency," accessed July 8, 2024, https://www.miga.org/.
39 Naoko Ishii et al., "Financing Nature: A Transformative Action Agenda," Discussion Paper (Center for Global Commons, December 3, 2023), https://www.systemiq.earth/financing-nature/.

New Forests

Important Note

This document is dated 30 August 2024. Statements are made, and data is current, only as of the date of this document unless otherwise stated. New Forests is not responsible for providing updated information to any person.

The information contained in this document is of a general nature and is intended for discussion and illustrative purposes only and does not represent advice or recommendation to enter into any investment, project or transaction. The information does not constitute financial product advice or provide a recommendation to enter into any investment nor is it an offer to buy or sell, nor a solicitation of an offer to buy or sell, any interests, security, or other financial product. This document has been prepared without taking account any prospective investor's objectives, financial situation or needs and does not purport to contain all the information a person may require in evaluating whether or not to investigate further in relation to an investment, transaction or opportunity or in relation to its content matter. Prospective investors are not to construe the contents of this document as legal, tax, investment, business, accounting, financial or other advice. Each prospective investor should consult its own advisers as to the legal, business, tax and other related matters concerning any investment or participation in any project or transaction.

The information, including certain economic and market information, is obtained from published sources and/or prepared by third parties. The information has not been independently verified and while New Forests believes such sources to be reliable, neither New Forests Group nor any of their respective shareholders, related bodies corporate, affiliates, directors, officers, employees, and advisors ("Beneficiaries") makes any representation or warranty as to the timeliness, quality, accuracy, completeness, reliability or suitability of the information in this document.

Nothing contained in this document may be relied upon as a promise or representation whether as to the past or the future. Past performance is not a reliable indicator, or guarantee, of future performance or results. To the maximum extent permitted by law none of New Forests, any member of the New Forests Group, nor any of their respective Beneficiaries, accepts any liability for any loss or damage (whether direct, indirect, consequential or otherwise) arising, including by way of negligence, from the use of the information contained in this document, the information contained in it being inaccurate or due to information being omitted from it.

This document may contain certain financial statements, projections, estimates, forecasts, or other statements in relation to future matters which are, by their nature, subject to significant uncertainties and contingencies, including information that uses forwarding-looking statements such as "may", "can", "will", "would", "seek", "should", "expect", "anticipate", "project", "estimate", "intend", continue", "target", or "believe" or their negatives, other variations or comparable terminology. Such forward-looking statements have been included for illustrative purposes only and are necessarily speculative in nature. Such forward-looking statements (including without limitation any assumptions on which they may be based) may or may not prove to be correct and may be affected by known or unforeseen risks, events or circumstances, the likelihood, and effects of which are not capable of precise assessment, including events or circumstances over which New Forests has no control. It can be expected that some or all of the assumptions underlying the forward-looking statements will not materialise and/or that actual events and consequences will vary significantly from the assumptions upon which the forward-looking statements have been based.

New Forests notes that all projections, valuations, and statistical analyses are subjective illustrations based on one or more among many alternative methodologies that may produce different results. Projections, valuations, and statistical analyses included in this document should not be viewed as facts, predictions, or the only possible outcome. Past performance is not an indicator of future performance.

Any market commentary in this document reflects the views of the author of that market commentary and statements in it may differ from the views of others in the New Forests Group. Market commentary has not been prepared to comply with requirements designed to promote the independence of investment research and is accordingly not subject to any prohibition on dealing with the dissemination of research.

Where information in this document includes reference to a publicly available source or source that can be subscribed to, recipients should refer to and interpret the information in the context of that source. Where any information about a subject is attributed to a source, the information is a summary of or extract from information from that source and may not be the complete information about that subject.

New Forests' views are subjective views and may not prove to be correct.

New Forests Advisory Pty Limited (ACN 114 545 274) is registered with the Australian Securities and Investments Commission and is the holder of AFSL No 301556. New Forests Asset Management Pty Limited (ACN 114 545 283) is registered with the Australian Securities and Investments Commission and is an Authorised Representative of New Forests Advisory Pty Limited (AFS Representative Number 376306). New Agriculture Pty Limited (ACN 658 097 020) is registered with the Australian Securities and Investments Commission and is an Authorised Representative of New Forests Advisory Pty Limited (AFS Representative Number 1298119). New Forests Inc. is registered as an investment adviser under the Investment Advisers Act of 1940, as amended (the "Advisers Act"). New Forests Asia (Singapore) Pte. Ltd. holds a Capital Markets Services Licence as an Accredited/Institutional Licenced Fund Management Company (A/I LFMC), issued by the Monetary Authority of Singapore.

All references to currency in this document are in US Dollars, unless specified otherwise.

Sydney
Melbourne
Kenya
New Zealand
Singapore
United States

www.newforests.com

Certified B Corporation

New Forests is part of the Certified B Corp community, a global movement of people using business as a force for good